INCOME AND, CONSUMPTION AND SAVING BEHAVIOR OF TURKISH HOUSEHOLDS

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

SEYİT MÜMİN CİLASUN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE/ DOCTOR OF PHILOSOPHY
IN
THE DEPARTMENT OF ECONOMICS

SEPTEMBER 2009

Approval of the Graduate School of Social Sciences

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ABSTRACT

INCOME AND, CONSUMPTION AND SAVING BEHAVIOR OF TURKISH HOUSEHOLDS

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September 2009, 205 pages

Using 2002-2006 Household Budget Survey, this thesis investigates the income, consumption and saving dynamics of Turkish households within a life-cycle theory framework by employing cross-sectional analyses and cohort techniques. Cohort techniques are used not only to analyze these variables, but also to investigate the demographics and components of income and consumption. The analyses are deepened by dividing the sample according to the location of the households (urban-rural areas), and significant differences are found between urban and rural households, especially in terms of saving behaviors. Income, consumption and savings of formal and informal households are also investigated. Analyzing these households provides information regarding the precautionary saving since the higher income uncertainty of the informal households is expected to force them for extra saving due to precautionary motive. Finally, the life-cycle model and the precautionary saving hypothesis are tested by estimating log-linearized Euler equations. In the test of precautionary saving hypothesis, formal-informal data are used as a proxy for the risk variable. According to the estimation results, the

predictions of the life-cycle model do not hold for Turkey but there is no evidence that this is due to precautionary saving.

Keywords: Cohort Techniques, Turkish Household Budget Survey, Synthetic Panel Data, Precautionary Saving, Life-Cycle Model

ÖZ

TÜRKİYE'DEKİ HANEHALKLARININ GELİRLERİ VE TÜKETİM VE TASARRUF DAVRANIŞLARI

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Eylül 2009, 205 sayfa

Bu çalışma, 2002-2006 Hanehalkı Bütçe Anketlerini kullanıp, Türkiye'deki hanehalklarının gelir, tüketim ve tasarruf dinamiklerini yaşam döngüsü teorisi çerçevesinde, yatay kesit analizleri ve kohort tekniklerinden faydalanarak incelemiştir. Çalışmada, kohort teknikleri yalnızca bu değişkenleri incelemek için değil, aynı zamanda demografik özellikler ve gelir ve tüketimi oluşturan altkalemlerin incelenmesi için de kullanılmıştır. Analizler, örneklemde kır- kent ayrımına gidilerek derinleştirilmiş ve kırda ve kentte yaşayan hanehalkları arasında, özellikle tasarruf davranışı açısından, önemli farklar bulunmuştur. Ayrıca, formel ve enformel hanehalklarının gelir, tüketim ve tasarrufları da incelenmiştir. Bu inceleme bize ihtiyat güdüsünün önemi hakkında bilgi de vermektedir çünkü enformel hanehalklarının daha fazla gelir riskine maruz kalmaları ve bu yüzden formel hanehalklarına göre ihtiyat güdüsüyle daha fazla tasarruf yapmaları beklenmektedir. Son olarak çalışmada yaşam döngüsü modeli ve ihtiyat güdüsü hipotezi, doğrusallaştırılmış ve logaritması alınmış Euler denklemi tahminleriyle test edilmiştir. İhtiyat güdüsü hipotezinin testinde, formel-enformel verisi riskin bir göstergesi olarak kullanılmıştır. Tahmin sonuçlarına göre Türkiye'deki hanehalkları

yaşam döngüsü modelinin öngördüğü şekilde davranmamaktadırlar ancak bunun sebebi ihtiyat güdüsüyle hareket etmeleri değildir.

Anahtar Kelimeler: Kohort Teknikleri, Hanehalkı Bütçe Anketi, Sentetik Panel Veri, İhtiyat Güdüsü, Yaşam Döngüsü Teorisi

To My Family

ACKNOWLEDGMENTS

In the first place, I would like to express my deepest gratitude to my supervisor Assist. Prof. Dr. Murat G. Kırdar who has offered great encouragement, guidance and support in all phases of this study.

I would like to convey special thanks to the Prof. Dr. Erol Taymaz, Assoc. Prof. Dr. Hakan Ercan, Assoc. Prof. Dr. Nur Asena Caner, Assoc. Prof. Dr. Burak Günalp and Assist. Prof. Dr. Ebru Voyvoda because of their invaluable contribution to my thesis.

I also would like to thank Prof. Dr. Halil İbrahim Ülker, Prof. Dr. Sinan Sönmez, Assist. Prof. Dr. Salih Ak and my other colleagues at Atılım University for their great support.

My thanks also go to my friends Burak Sönmezer, Cansu Betin, Zeynep Elitaş, Fatih Demirci and Emre Soylu for their support and enjoyable study sessions. I am deeply grateful to Canan İşler. I believe she is an angel and sent me to make me complete my thesis. And finally, thanks mom, for everything.

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CHAPTER 1

INTRODUCTION

Consumption accounts for about two thirds of GDP in most countries and it is the most important determinant of welfare. In addition, consumer attitudes to saving, which are based on consumption decision, are very important for capital accumulation, the process of investment, growth and development. These facts make consumption and saving among the most popular research areas both in macroeconomics and microeconomics.

In order to explain the consumption behavior many models were developed in the literature. Among those Friedman's (1957) permanent income theory and Modigliani and Brumberg's (1954) life-cycle theory are the lasting contributions of the modern consumption function literature. Their main argument is that individuals try to keep the marginal utility of consumption constant over time by doing intertemporal allocations of consumption.

In the simplest form, life-cycle model examines the consumption behavior of the individual over the lifetime. Given that income is available to the individual only while he/she is in the labor force, individuals have to accrue wealth (by saving) while still in the labor force. Following retirement, the individual has no income and is forced to decumulate wealth in order to keep consumption at some desired level. The permanent income theory is concerned with the evolution of consumption expenditure over the short term and in relation to income. In theory, measured income is the sum of two components; permanent income and transitory income. The change in consumption comes from the permanent income since the individuals change their consumption behavior only if they believe the change in their income is permanent. The main difference between life-cycle and permanent income

models in their original formulation lies in the time horizon considered. The life-cycle model is a finite horizon model, while in the permanent income model the horizon is infinite. Moreover, while the life-cycle model focuses on the relationship between age, consumption, savings and the accumulation of assets, the permanent income theory concentrates on the dynamic behavior of consumption.

Most of the recent studies use rational expectations version of the life-cycle model[1], which is first used by Hall (1978). The model is based on the idea that current and past values of income and wealth have no predictable power on consumption. Flavin (1981) added the autoregressive specification for the process governing labor income to a model similar to Hall (1978). The coefficients of the lags of income changes, the "excess sensitivity" parameters, are found to be significant; therefore, the life-cycle model is rejected by the data due to the fact that anticipated changes in income predict changes in consumption.

Hall and Mishkin (1982) tested the validity of life-cycle model by employing micro data (data from Panel Study of Income Dynamics (PSID)) in a similar fashion to Flavin (1981). By using the advantage of micro data they have controlled for the household characteristics and found results in favor of the life-cycle model. The panel data studies in literature tested the excess sensitivity by using different utility functions such as quadratic, CRRA, and also by using different control variables and different consumption definitions such as food expenditures, durable and non-durable expenditures. Some examples of those studies are Bernanke (1984), Altonji and Siow (1987), Lusardi (1996) and DeJuan and Seater (1999).

In the absence of long panel data, the method developed by Deaton (1985) and Browning, Deaton and Irish (1985) is used in the literature. This method is based on

[1] If permanent income is taken to be annuity value of life-time resources, the life-cycle model and permanent income model are very close. In the literature many names are given to those models, in this study the life-cycle model is used.

constructing pseudo-panel using cohort averages[2]. The studies using pseudo-panels generally find results in favor of life-cycle model (see for example, Blundell et al. (1994); Attanasio and Weber (1995)).

The empirical failure of the life-cycle model is often attributed to the presence of liquidity constraints. Deaton (1991) states that limited borrowing opportunities may help to explain why consumption appears to track income quite closely over the life cycle and why most households hold very few assets. One of the most influencing papers about liquidity constraints is Zeldes (1989). He used an Euler equation with household controls and tested the existence of excess sensitivity for two subsamples: high asset group and low asset group. He found that the lower the income, the greater the effects of not being able to borrow and the higher the growth rate of consumption[3].

Carroll (1997) claims that the finding of Zeldes (1989) that states that "low asset group facing greater consumption growth" is not a result of liquidity constraint but a result of precautionary saving. If next period's consumption growth is risky, consumption now should be lower and consumption growth higher because there is a greater precautionary motive for saving. It is precisely those consumers who have low assets who are most affected from consumption variability and who reduce consumption now. Consequently, low assets predict high consumption growth, just as Zeldes finds. The precautionary saving literature mainly focuses on finding a good indicator of uncertainty. While some studies provide evidence in favor of precautionary saving like Carroll and Samwick (1997, 1998), Kazarosian (1997), Albarran (2000) and Guariglia and Kim (2004) some provide against it such as Guiso, Jappelli and Terlizzese (1992) and Kuehlwein (1991).

[2] This study is based on this method. Therefore, it is discussed in detail in the further parts of the study.

[3] Runkle (1991), Hayashi (1985), Jappelli and Pagano (1988), Deaton (1991), Dynan (1993) and Attanasio (1994) are the other examples of liquidity constraint studies.

The aim of this study is to analyze income, consumption and saving dynamics of the Turkish households. Understanding consumption and saving is vital due to several reasons. First of all, as mentioned before consumption accounts for about two thirds of GDP in most countries and it is the most important determinant of welfare. Second, saving is very important for capital accumulation, the process of investment, growth and development. Moreover, as a developing country, the absence of efficient credit markets in Turkey makes savings as the most important mechanism that smoothes out shocks on income. This fact is important since these shocks may interrupt the human capital accumulation process at early ages which could lead to worse living conditions in the future. Finally, low level of saving is one of the main reasons of the current account deficit. If that deficit is financed by foreign capital inflow, a sudden capital outflow would lead to the depreciation of the domestic currency, and a decrease in GDP just as we experienced during current global economic crisis of 2008.

The analyses carried out in the study are important in several aspects. First, analyzing the age profile of savings can help us to understand the saving rate of the country which is very critical due to the reasons explained above, and to make future predictions since the savings of the country depends on the ratio of the population that earns income and therefore able to save. Moreover, different theories of consumption are tested using micro data which is more appropriate since the consumption theory applies to an individual or household. Finally, this detailed study of income, consumption and saving dynamics will contribute to small micro study literature in Turkey and in developing countries and can be used as a reference point for future studies. In addition to these, while I am investigating the income, consumption and saving, I disaggregate the population into education groups in order to see the differences in saving along the distribution of income. This is crucial since the different sectors of the population could have different saving motives.

Analyses throughout the study are based on micro data obtained from 2002-2006 Turkish Household Budget Surveys (HBS). Using micro data has the immediate attraction because consumption theory applies to an individual or a household. Moreover, while micro data allows controlling for the individual characteristics; aggregate data in a representative agent framework destroys all individual personality. Most of the studies on developing countries employed macro data to investigate saving and consumption (see, for example, Hussein and Thirlwall, 1999; Loayza, Hebbel and Serven, 2000; Masson, Bayoumi and Samiei, 1998); however, little effort has been paid to understand the saving and consumption behavior of households mainly due to lack of surveys[4]. Similar to the other developing countries, there have been some macro studies about consumption and saving for Turkey (Akçin and Alper, 1999; Özcan, Günay and Ertaç, 2003; Özmen and Yavan, 1999); however to the best of our knowledge very few studies have been carried out by employing micro data. One of these few studies is Van Rijckeghem and Üçer (2008) which investigates the determinants of saving, and the change in savings throughout the time. Yükseler and Türkan (2008) analyze the income, consumption and their components by using household budget surveys. Duygan (2005) found that the higher unemployment risk reduces the likelihood of buying durable goods, by employing 1994 Household Consumption Expenditures Survey. Another study that uses micro data is Duygan and Guner (2007). They analyzed the income and consumption inequalities in Turkey by using 1994 and 2002 household surveys.

The dynamics of income, consumption and saving are investigated with three approaches throughout the study. I first use the cross-section data obtained from 2006 HBS. In this part, analyses are based on the tabulation and graphing of the cross-sectional profiles of those variables by the age of the household heads. Although mean values are presented for some variables, the measure of location that is primarily used is the median which makes the analysis robust to the presence of outliers. I also examine how income, consumption, and saving profiles vary according to income quartiles to understand the distribution in these variables, as

[4] Some exceptions are Kraay (2000), Attanasio and Szekely (2000), Hong, Sung and Kim (2002) and Marku (2004).

well as how this distribution changes by age. In addition, at the cross section level, I analyze how consumption and saving profiles vary according to permanent income of households by using the education level of household heads as an instrument for permanent income. Furthermore, I compare the cross-section profiles from 2002 to 2006 to see how these profiles evolved over time.

The use of single cross-section can only provide a limited picture if we are interested in variables that present dynamic behavior such as consumption and saving. In addition, if there are strong cohort effects, interpretation of the cross-section profile as the life-cycle profiles of the variable can be misleading. In this respect, these variables are also investigated employing cohort analyses. The idea behind this approach is; rather than following the same individual over time, one can follow the average behavior of a group of individuals as they age. The natural group to study life-cycle profiles is the year of birth cohorts. The life-cycle profiles of variables that are interested are identified by plotting the average values of the variables for each cohort against age. It would be possible to track the age profiles since different cohorts are observed over different parts of their life-cycles. Moreover, if the period understudy is longer than the interval used to define a cohort, different cohorts would be observed at the same age although, at different points in time. The difference between the cohorts could occur due to the cohort effects or time effects. In order to obtain the cohort, year and age profiles separately, an identification strategy introduced by Deaton (1997) which is based on the estimation of the variables on set of cohort, age and year dummies is applied. The graphs of the identified effects are also plotted.

The cohort analyses explained above are applied first to investigate the demographics such as the household composition and the educational attainments since these are expected to have an effect on income, consumption and savings of the households. Thereafter, income, consumption, saving, saving rate and saving to consumption ratio profiles are derived by using cohort data. Alternative saving definitions are used as well. In order to have a better understanding of income and

consumption, the components of income and consumption are investigated. Since the behavior of households living in rural and urban could differ, the same analyses are replicated by dividing the sample according to the location of the households. Finally, I have investigated income, consumption and savings of the formal and informal households. Analyzing these households is important because these analyses can provide information regarding the precautionary saving since the higher income uncertainty of the informal households can force them for extra saving due to precautionary motive. While doing these analyses, the social security contributions of the formal sector households are calculated and considered as saving as well. In addition to help us to understand the life-cycle dynamics of the variables of interest, these graphical analyses also help us to test the life-cycle hypothesis.

A more formal way of testing the life-cycle hypothesis is based on the estimation of Euler equation that comes from the utility maximization problem of a consumer. In his respect, I have estimated a log-linearized Euler equation with demographics and income growth (excess sensitivity parameter) as additional regressors. The empirical failure of the model is often attributed to the liquidity constraints and precautionary saving. Therefore, I have analyzed the presence of liquidity constraint and precautionary saving in the data as well.

The rest of the study is organized as follows: Chapter 2 discusses the data. Chapter 3 gives the cross-sectional analyses using 2006 HBS. While Chapter 4 presents the cohort analyses, econometric analyses based on Euler equation estimations are given in Chapter 5. Finally, the last chapter concludes the thesis.

CHAPTER 2

DATA

The data used in this study are from the 2002- 2006 Household Budget Surveys (HBS). These surveys provide information about household structures, their socioeconomic conditions and demographic characteristics. Moreover, information regarding consumption expenditures and income are also available. The purpose of the survey could be listed as follows:

to construct the consumer price index,

to follow the change in consumption pattern in time,

to analyze the distribution of income,

to compile the data that helps to estimate the private consumption in National Accounts,

to obtain the data that is used to determine the minimum wage,

to obtain the data for socioeconomic analyses such as determination of living standards of households.

The first survey that covers the whole country was conducted in 1987. The results of the next survey, 1994 survey, were used in the construction of 1994 based year CPI. TUİK decided to conduct the survey regularly every year beginning from 2002. The 2002 survey was applied to 9600 households and information regarding the consumption expenditure and income were obtained at levels of Turkey, rural and urban areas. In order to use in the construction of harmonized index of consumer prices (HICP), the number of households were increased to 25920 in 2003 survey and this survey provided data at Turkey, rural and urban, NUTS-1, for every NUTS-1 level rural and urban and NUTS-2 levels. The sample size of 2004, 2005 and 2006 surveys was kept fixed at 8640. While the 2004 survey provides data

at the Turkey, rural and urban, NUTS-1, for every NUTS-1 level rural and urban and NUTS-2 levels, 2005 2006 surveys provide data at Turkey, rural and urban levels.

HBS is representative of Turkish resident population. However, the institutionalized population is excluded from the surveys. A two-stage stratified sampling procedure is used in selection. Surveys were applied to different urban (population with 20001 people and above) and rural (population with fewer than 20001 people) households every month; however, the sample size is kept constant. The sample unit is the household which is defined as an individual or group of people living in the same dwelling that depend on pooled income for major expenses. In order to conduct the survey, the interviewers visited the households eight times during the interview month and recorded the expenditure and income information. Nonrespondents are replaced by households with similar characteristics.

The information obtained from surveys is provided in three types of data sets; individual, household and consumption data set. “Individual data set” contains information on variables related to individuals such as age, education, employment and income. “Household data set” contains information on variables related to socioeconomic conditions of the households and “consumption data set” contains variables related to the expenditures on goods and services. HBSs could be obtained from Turkish Statistical Institute (TurkStat).

A critical piece of information that will be used in the study is on expenditures. The expenditures of a household are recorded to a diary by a household member during the interview month. In addition to that diary, members above the age fourteen are given an individual expenditure diary to record the daily individual expenditures. The consumption expenditures do not only include the purchases of goods and services but also the consumption of the goods derived from the economic activities of household members and the expenditures on the gifts given to the other households or institutions. In constructing the consumption data set, the

consumption of goods and services are classified according to classification of individual consumption by purpose (COICOP)[5]. This classification captures the durable goods as well. In the calculation of household total monthly consumption expenditures variable, which is given in household data set, durable goods are included by dividing the durable expenditures by twelve. The yearly consumption expenditures are obtained by multiplying the monthly values with 12.

In addition to expenditure, HBS contains information on income and its components. The income questions are asked at the end of the interview month and they refer to the 12 months before the interview. The annual individual disposable income data is obtained by adding labor income[6] (including wages, salaries, overtime bonuses, fringe benefits and payments in kind, agricultural and self-employed income and income from copyrights), capital and property income[7] (including rent, interest income and dividends) and transfers (including pension benefits, pension arrears, unemployment and illness compensation, student grants, alimony, remittances and payments in kind). In addition to individual disposable income, the household disposable income variable is also given in HBS. This variable is calculated as the sum of individual disposable incomes and imputed rent minus expenditures other than consumption (taxes such as property tax, customs; fines due to late payments, traffic fines and etc.; alimony and alms prescribed by Islam) and regular financial aids done by the households to the institutions and other households. Since the questions on income refer to the 12 months before the interview, household disposable income data are inflated to the survey month.

In addition to income and consumption, this study provides a detailed analysis of saving. There are two basic approaches used in defining household saving. The first

5 The classification is as follows: 1. Food, beverages and tobacco, 2. Alcoholic beverages, tobacco and narcotics, 3. Clothing and footwear, 4. Housing, water, electricity, gas and other fuels, 5. Furnishings, household equipment and routine households maintenance, 6. Health, 7. Transport , 8. Communication, 9. Recreation and culture, 10. Education, 11. Restaurants and hotels, 12. Miscellaneous goods and services.

6 Labor income is reported as net of taxes and social security contributions.

7 Capital and property income are reported as net of taxes.

equates saving with the flow of income minus the flow of expenditures during a given period of time. According to the second approach, saving is defined as the change in household's net worth during a given time period. If large capital gains or losses occur on existing assets, these two definitions could differ substantially. In this study, the flow definition of saving is used. As mentioned above, consumption expenditures include the spending on durable goods which could be accepted as saving. In this respect, a wider definition of saving is also investigated by considering expenditures on durables, health and education not as consumption but as saving.

HBS also contains information on socioeconomic characteristics of households such as age, sex, education, occupation, family composition, and detailed information on house and the goods owned[8]. HBS manual gives information on variables available at data sets.

In the study, I have investigated the dynamics of income, consumption and saving by dividing the sample according to location of the household (rural-urban) and formal-informal status as well. The separation according to location is done by using information regarding the location of the household in the data set.

In order the see how income, consumption and saving dynamics differ between formal and informal sector workers I have divided the sample into two; formal households, informal households. While dividing the sample I first exclude the rural households since they are mostly working in agriculture sector and their family composition, income dynamics and etc. can be quite different. On what follows, I have dropped the households that have a retired member since I also want to study the effects of income uncertainty. I have considered an individual as working in informal sector if he/she is not registered into any social security institution by using the survey question of "which social security institution are you participating?". Existence of an individual working in formal sector in a household

[8] Additional information regarding the variables used in the study will be given in the further parts of the study.

reduces the income uncertainty relative to households formed by the individuals all of which are working in informal sector. In this respect, while the definition of formal household captures the households with at least one individual working in formal sector, the informal households consists of only individuals working in informal sector.

When the HBSs are compared, it could be observed that there are some minor differences between the 2002 survey and the others. In 2002 HBS, the household disposable income is not calculated. The variables that are used to calculate household disposable income are also not given in 2002 survey. These variables are; the variable that inflates the disposable income, "expenditures other than consumption" variable and "regular financial aids done by the households to the other households and institutions" variable. Since the household disposable income could not be calculated without those variables, this variable is provided by TurkStat separately upon our request.

In order to compare the changes in time, variables under interest are calculated in 2002 prices using CPI index. Moreover, the calculations also employed the weights which are proportional to the reciprocal of the probability of each households being included in the survey. The yearly incomes that are lower than 100 YTL are coded as missing values before the analyses.

In Chapter 3, the cross-sectional analyses of total household disposable income, consumption, saving, saving rate and saving to consumption ratio are investigated by using 2006 HBS. The descriptive statistics of these variables are given in Table 2.1.

Table 2.1: Descriptive Statistics of 2006 HBS

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Income	8554	16337.47	12949.88	14402.31	363.05	386860
Consumption	8554	14619.66	11638.06	11686.87	438.30	167039
Saving	8554	1721.7	1051.54	11215.71	-137683	219821
Saving Rate	8554	-0.025	0.096	0.684	-20.183	0.924
Saving Consumption Ratio	8554	0.213	0.107	0.621	-0.953	12.093

The higher mean value of income relative to median indicates the presence of very rich people in the sample. The mean and median consumption are close to income (nearly 90% of the income). Regarding the savings, an important point to mention is the high variance which indicates the noisiness of the data. While the mean saving rate of the sample is negative (-0.025), median saving rate is found positive (0.096). The reason behind this finding is the high negative saving rates observed in the data. As expected, the variability of saving to consumption ratio is less than the variability of saving to income ratio.

The cohort analyses of Chapter 4 and econometric analyses of Chapter 5 are based on the synthetic panel data constructed according to the date of birth groups of the household heads. While the first subsections of Chapter 4 use the whole sample to calculate the cohort averages of the variables, analyses are also carried out by dividing the sample according to location of the households (urban-rural) and formal-informal status in the further parts of the chapter. Table 2.2 reports the descriptive statistics of the variables obtained by taking the cohort averages or medians using whole sample[9].

The number of observations in cohort analyses is 172, 43 cohorts (ages between 25 and 67 in 2002) followed for four years. Both mean and median income and consumption are above 6000 YTL. Mean saving rate of the cohorts is found 11% with a minimum of -5.4% (cohort with age 55 in 2002) and a maximum of 22.6% (cohort with age 57 in 2004). Saving rate2 is calculated, as mentioned above, by using a wider definition of saving that includes expenditures on durables, health and education. As expected saving rate2 is higher than the saving rate which is due to significant durable expenditures. When we look at the last three rows, we can see that while the mean health and education expenditures are 132 and 174 YTL, mean durable expenditure is 705 YTL[10].

[9] The descriptive statistics of the variables that are used in urban-rural, formal-informal and econometric analyses are reported in the tables given in the Appendix.
[10] Mean durable expenditure is nearly 12% of the mean total consumption.

Table 2.2: Descriptive Statistics of the Variables Used in Cohort Analyses (Whole Sample)

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Income	172	6905.756	6868.753	1133.823	4830	9630.803
Consumption	172	6126.895	6110	952.1045	4180	8550
Saving	172	676.3264	643.5	317.5499	-152	1700
Saving Rate	172	0.1103	0.1064	0.0457	-0.0542	0.2263
Saving Consumption Ratio	172	0.1269	0.1191	0.0576	-0.0514	0.2925
Saving Rate2	172	0.1776	0.1790	0.0452	0.0169	0.3105
Number of Nuclear Families	172	1.2305	1.2074	0.0880	1.0800	1.5107
Share of University Graduates	172	0.0921	0.0948	0.0354	0	0.1687
Share of High School Graduates	172	0.2616	0.2719	0.1088	0.0448	0.5189
Household Size	172	4.0858	4.1343	0.5016	2.8816	5.1116
Number of Children	172	1.7511	1.7633	0.613	0.537	2.9166
Labor Income	172	6514.192	6650	2286.139	2042.1	13400
Interest Income	172	202.2655	153.5	203.1339	7.94	1810
Real Property Income	172	316.9844	261.5547	291.3077	0	2330
Transfer Income	172	334.8193	312	107.7071	175	784
Pension Income	172	1497.294	1450.203	1238.943	73.8	3995.509
Nondurable Expenditure	172	6781.567	6834.76	881.743	4740	8834.4
Education Expenditure	172	131.9269	99.6	115.8693	0.38	555
Health Expenditure	172	173.8303	156.5	59.61647	74.2	433.12
Durable Expenditure	172	705.3055	588.0435	409.927	96.4	2110

Notes: The first six variables are calculated by taking the cohort medians (income to savingrate2), rest is calculated by taking cohort averages.

Regarding the demographics, the mean household size is found 4.08, and mean number of children that are below 15 is found 1.75. For both variables, the minimum values are observed for very old cohorts, the maximum values are observed for middle-aged cohorts. The average number of nuclear families living in the same house is 1.23 which indicates that, some of the young and old households seem to prefer living with their parents or children. While the average share of household heads that are university graduates is 9.2%, the share of high school graduates are 26.1%. As expected these shares are higher when we move from older to younger cohorts (the cohorts that have no university graduates are the two oldest cohorts). When we look at the components of income we see that following labor income, the most important source of income of the households are pension income,

transfer income, real property income and interest income, respectively. The zero real property income belongs to the youngest cohort.

CHAPTER 3

CROSS-SECTIONAL ANALYSES

In this part of the study, income, consumption, and saving profiles are analyzed by using 2006 HBS. These analyses are based on the tabulation and graphing of the cross-sectional profiles of those variables by the age of the household heads. Since we are not interested in the absolute levels but the shapes, all figures in this part are obtained using current prices. The sample is divided into 10 age groups. Although mean values are presented for some variables, the measure of location used mainly is the median. This makes the analysis robust to the presence of outliers.

3.1. Income

The first variable that is investigated is household disposable income. Table 3.1 presents the mean and median household disposable income by five-year age groups.

Table 3.1: Median and Mean Household Disposable Income by Age Groups (2006 prices)

Age	Median Income	Mean Income
<25	8,931	10,812
25-29	10,793	12,987
30-34	12,473	14,815
35-39	12,706	15,585
40-44	14,182	17,485
45-49	16,230	19,505
50-54	15,389	19,506
55-59	14,469	17,571
60-64	11,316	15,799
>64	9,990	12,841
All	13,103	16,378

It can be seen from the table that the mean income is higher than the median due to the existence of very rich people in the sample. The median annual income for the whole sample is 13,103 YTL, whereas the mean income level is 16,378 YTL (2006 prices). Median income has its peak at ages 45-49; median income for this age group is 1.8 times that of the youngest group and 1.6 times that of the oldest group.

Mean and median household income according to age is plotted in Figure 3.1. Both the mean and median income present hump-shaped profiles, as they are in many other countries. The median family income increases until ages 45-49, it is reasonably flat between ages 45 and 59, and it declines sharply afterwards, with retirement. The mean household income has a very similar shape.

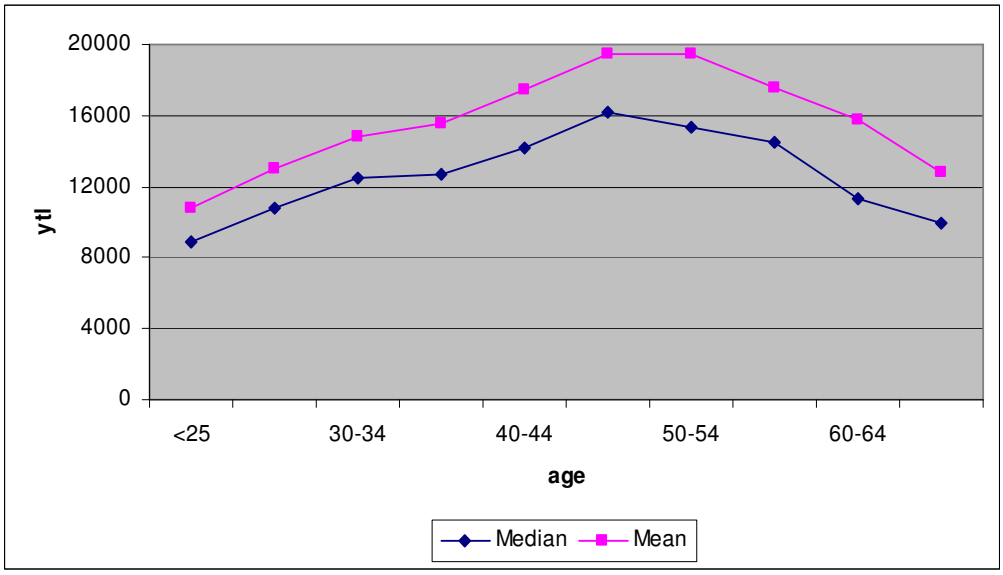

Figure 3.1: Median and Mean Income by Age Group (2006 prices)

When we compare the shape of the age profile of median income with the shapes presented in Attanasio (1994) for US, Börsch-Supan (1994) for Germany, Jappelli and Pagano (1994) for Italy and Takayama and Kitamura (1994) for Japan, it could be said that the age profile is less humped in Turkey relative to those countries. The difference in median income between the households with young household heads

and middle-aged household heads is relatively lower in Turkey. In a similar way, the decline in median income between the households with middle-aged household head and the old household heads is lower in Turkey relative to these countries.

Income is also analyzed by income quartiles in order to learn about the distribution of income and how this distribution changes with age. Median household income by income quartiles is reported in Table 3.2, where 1 denotes the lowest and 4 the highest quartile. These income quartiles are plotted in Figure 3.2.

Table 3.2: Median Income by Age Group and Income Quartile

	Income Quartile			
Age	**1**	**2**	**3**	**4**
<25	4866	7238	11282	18756
25-29	5007	8745	13847	21062
30-34	5711	10182	14840	23646
35-39	6287	10483	15450	25992
40-44	6820	10983	17060	29392
45-49	7837	13255	18627	30950
50-54	7699	12911	18987	31801
55-59	7207	11639	17219	28437
60-64	5892	9645	14735	27244
>64	4802	8514	12078	22321
All	6248	10592	16014	27130

According to Figure 3.2, for all quartiles age-profiles of income present hump shapes, similar to that presented in Figure 3.1 for the whole sample. However, income peaks at ages 50-54 for the wealthiest two quartiles, which is later than the peak points of the poorest two quartiles and of the whole sample[11]. Another interesting feature in Figure 3.2 is that the hump-shape is stronger in the profile of the wealthiest quartile.

[11] Income of these two quartiles and whole sample peak at 45-49 age group.

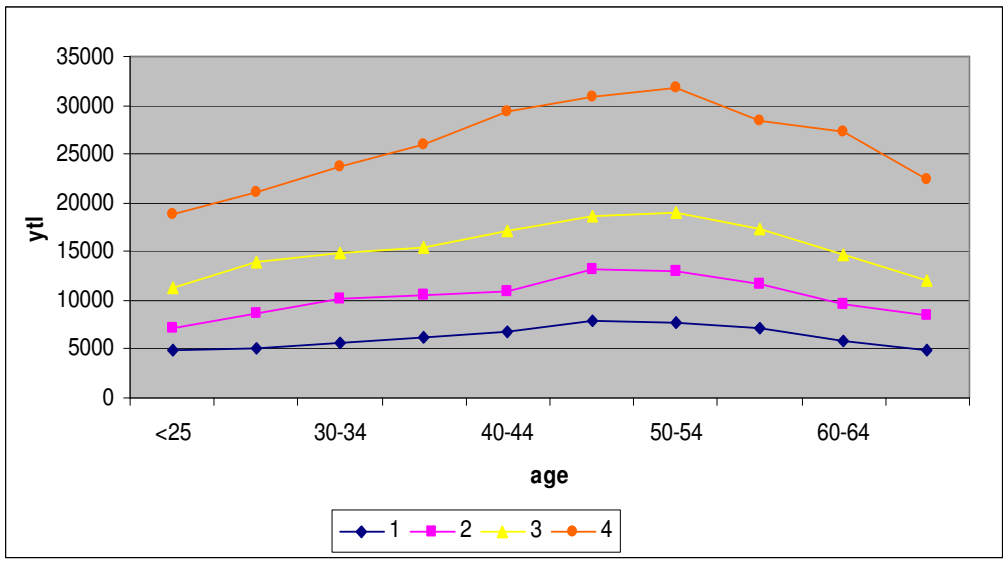

Figure 3.2: Median Income by Age Group and Income Quartile

Although the differences among the quartiles plotted in Figure 3.2 provide evidence for the degree of income inequality in Turkey, this inequality does not change so much by age. For instance, for the lowest quartile, the ratio of median income to the median income of the whole sample lies between 0.45 and 0.55 for all age groups. For the second quartile it is almost constant at around 0.8 for all age groups. For the third quartile, it is around 1.35 and for the richest quartile it is around 2, again for all the age groups. However, in contrast to Turkey, inequality is more pronounced for central age groups in USA (Attanasio, 1994) and in Canada (Burbidge and Davis, 1994).

Finally, we analyze the life-cycle profile of income by educational attainment, which is a good indicator of permanent income. For this purpose, the sample is divided into four groups on the basis of educational attainment of the household head, which are less than primary, primary, high school and college. Table 3.3 presents the cross-sectional profiles of median household income by education groups, which are plotted in Figure 3.3.

Table 3.3: Median Income by Age and Education Groups

Age	Educational Attainment			
	Less than Primary	Primary	High School	College
<25	3874.25	8081.726	11256.12	16379.3
25-29	3945.07	8686.035	12263.82	19706.03
30-34	5406.969	9889.833	13919.82	21675.8
35-39	7862.74	10456.29	14332.49	27111.01
40-44	8106.128	11252.42	16217.2	27903.42
45-49	9252	14241.67	17957.07	25439.56
50-54	9855	14448.14	18048.45	25920
55-59	10185	13994.38	16957.26	27648
60-64	8246	11274.07	16441.61	27651.42
>64	7823.103	10755.02	14628.1	29317.61
All	8216.846	11781.420	15430.760	24959.400

According to Figure 3.3, for all education groups, income peaks at older ages than for whole sample. For the less than primary group, income rises until the age group 55-59 then declines sharply at 60-64. For primary graduates and high school graduate, the rise in income continues until ages 50-54. The hump shape disappears completely for college graduates. For this group income increases strongly by age, until age 40, thereafter it exhibits a relatively constant trend. However, it should be noted that the number of observations for the college graduates at old ages are fewer. Therefore, interpretations should be done cautiously. The high increase in income for college graduates in the first part of the life-cycle is also evident in Mexico and Thailand (Attanasio and Szekely, 2000).

The hump shape of income for the whole sample, which is presented in Figure 3.1, is rotated counterclockwise for all education groups when the analysis are carried out by educational attainment (see fig. 3.3). In other words, a relative increase in income is observed for the old ages. A clock-wise rotation takes place when all education groups are pooled because among the younger age groups, there is a higher fraction of households with a highly educated head – due to the improvement in education in Turkey over time–, whose income are higher, and among the older

age groups, there is a higher fraction of low-educated household heads whose income are lower.

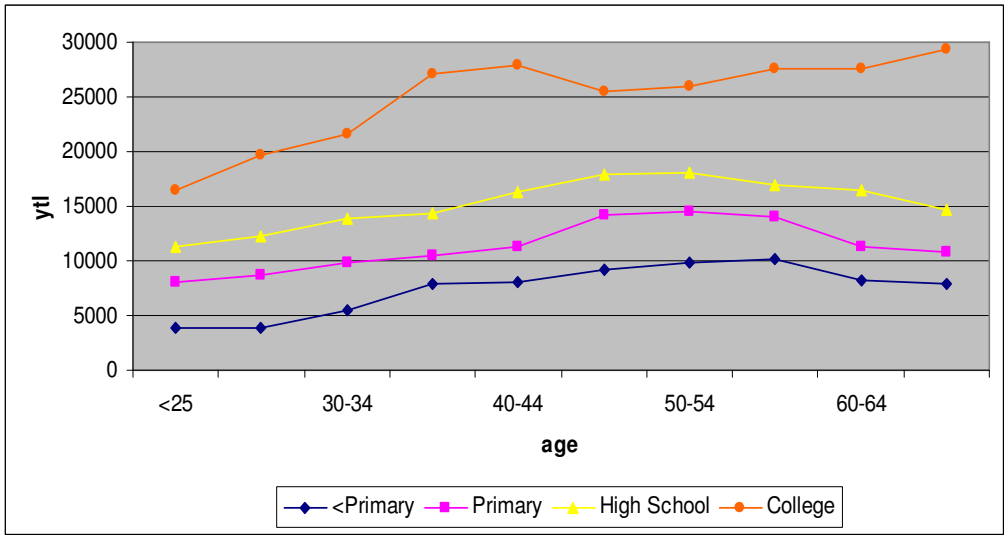

Figure 3. 3: Median Income by Age and Education Groups

Attanasio (1994) found that the hump is more pronounced for more highly educated people and that income peaks slightly earlier for the lowest educational group. The hump shape for the lowest education group is also not pronounced in Turkey; however, interestingly, income for this group peaks at very old ages (55-59). A possible reason for this is the change in household size and composition over time.

As mentioned above, the hump shape disappears for the college graduate in Turkey. However, Attanasio found that the hump is more pronounced for this group in US. In fact, for college graduates in Turkey, too, the profile rises quickly until age 40; however, there is no downward-sloping part of the profile. One possible reason for this could be significant differences between the individual characteristics of younger and older college graduates in the sample, which would arise due to the huge difference in the ratio of college graduates between younger and older cohorts.

3.2. Consumption

Cross-sectional profiles of median and mean consumption are given in Table 3.4. According to the table, the median consumption for the whole sample is 11,903 YTL. The consumption profile exhibits a hump shape, similar to that of income. It peaks at ages 45-49, with a median consumption that is 53% higher than that of the youngest group and 61% higher than that of the oldest group. According to life-cycle theory, consumption exhibits a smooth profile which contradicts to hump shape profile observed in Figure 3.4.

Figure 3.4 compares the median consumption profile with the median income profile by age. Both profiles exhibit hump shapes and peak at ages 45-49. However, the consumption profile is flatter than the income profile. The fact that consumption is smoother than income is also found in developed countries such as US (Attanasio, 1994) and UK (Attanasio and Browning, 1995) and in developing countries such as Mexico, Peru and Thailand (Attanasio and Szekely, 2000). The difference between consumption and income is smaller at the very young and very old ages and larger at middle-ages. Indeed, consumption exceeds income for households with a head younger than 25.

Table 3.4: Median and Mean Consumption by Age Groups (2006 prices)

Age	Median Consumption	Mean Consumption
<25	9506	11461
25-29	9950	11570
30-34	11339	13522
35-39	11616	14073
40-44	13008	15718
45-49	14510	17051
50-54	13847	17719
55-59	12958	16263
60-64	11135	13766
>64	9020	11272
All	11903	14697

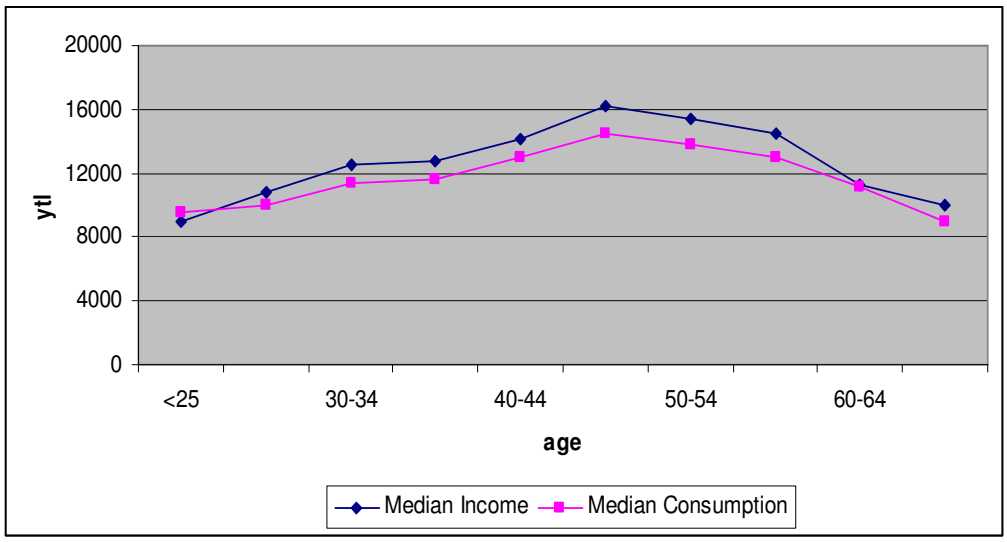

Figure 3.4: Median Income and Median Consumption by Age Group (2006 prices)

In order to investigate the effect of income levels on consumption, the cross-sectional profiles of median consumption by income quartiles are constructed, and the results are reported in Table 3.5 and plotted in Figure 3.5. As it is expected, consumption increases with income for all age groups. In addition, for all income quartiles the hump shape of consumption are similar to the one plotted for the whole sample in Figure 3.4.

Table 3.5: Median Consumption by Age Group and Income Quartile

	Income Quartile			
Age	**1**	**2**	**3**	**4**
<25	5410	7531	10122	14926
25-29	5615	8652	11897	17077
30-34	6351	9633	13101	18578
35-39	6503	9741	13675	20168
40-44	7453	10572	15032	24052
45-49	8524	12201	17411	22023
50-54	7605	11828	16761	23968
55-59	7506	11246	14222	21663
60-64	5500	8841	13230	20923
>64	4641	7781	10261	16919
All	6395	10021	14096	20754

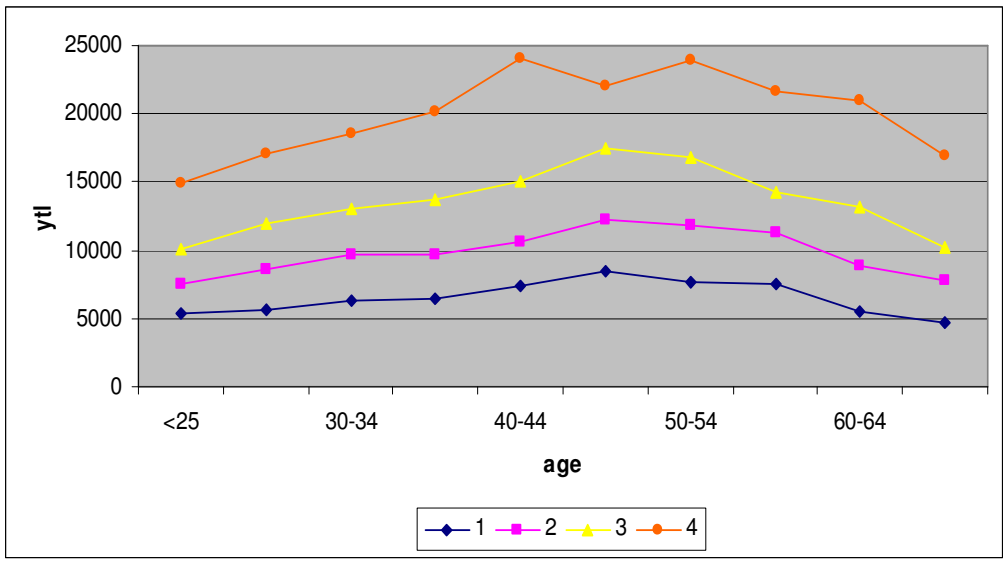

Figure 3.5: Median Consumption by Age Group and Income Quartile

The inequality in consumption does not change much by age, similar to the case observed for income. What is worth mentioning here is that, the differences in consumption between quartiles is narrower than the differences in income between quartiles. For instance, while the ratio of median income of lowest quartile to the median income of the whole sample for all age groups is around 2, the same ratio for consumption is around 1.8.

Table 3.6: Median Consumption by Age and Education Groups

Age	Educational Attainment			
	Less than Primary	Primary	High School	College
<25	6419	8341	10179	14965
25-29	4551	8383	10721	16693
30-34	4615	9588	12421	17741
35-39	7913	9797	13144	20439
40-44	6404	10990	15584	21462
45-49	9125	13157	15992	22779
50-54	9226	12504	15694	23968
55-59	10216	12490	15392	22768
60-64	6994	11020	15653	22624
>64	7311	9499	13351	24676
All	7701	10884	13853	20863

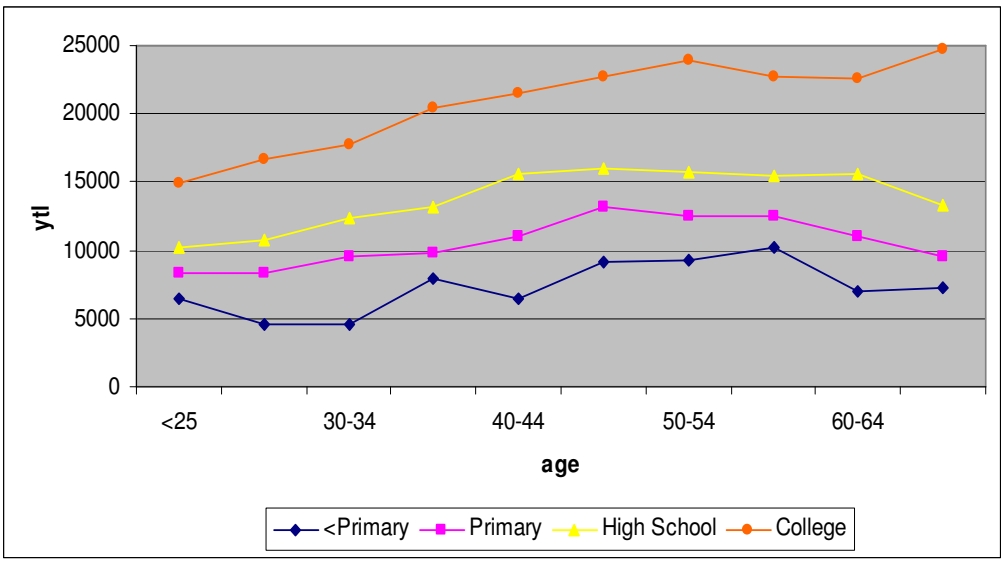

Figure 3.6: Median Consumption by Age and Education Groups

The cross-sectional profiles of median household income by education groups are reported in Table 3.6 and plotted in Figure 3.6. The profiles mirror those observed in income profiles. Compared to the consumption profile of whole sample, the consumption profile of each education group is rotated counterclockwise. Moreover, the hump-shape completely disappears for college graduates; it is also quite weak for high school graduates.

3.3. Saving

In Table 3.7 median and mean savings by age are reported, and in Figure 3.7 they are plotted. The median saving for the whole sample is 1,047 YTL. Figure 3.7 shows a deformed hump shaped age profile of median saving over the life-cycle, with its peak at ages 50-54. Thereafter, a decline in median saving is observed. Median saving is positive for all age groups, even those headed by the very old and very young, which is inconsistent with the life-cycle hypothesis. Nevertheless, the literature on liquidity constraints and precautionary savings motive can explain the positive savings of young households; health risk, lifetime uncertainty and bequest motive can explain the positive savings in old ages. The profile of saving which

exhibits high savings at the end of the life-cycle is similar to that of Japan (Takayama and Kitamura, 1994) and Italy (Jappelli and Pagano, 1994).

Table 3.7: Median and Mean Saving by Age Groups (2006 prices)

Age	Median Saving	Mean Saving
<25	318	-649
25-29	642	1417
30-34	985	1293
35-39	957	1527
40-44	1023	1767
45-49	1321	2454
50-54	1599	1820
55-59	962	1308
60-64	1082	2033
>64	1077	1568
All	1047	1686

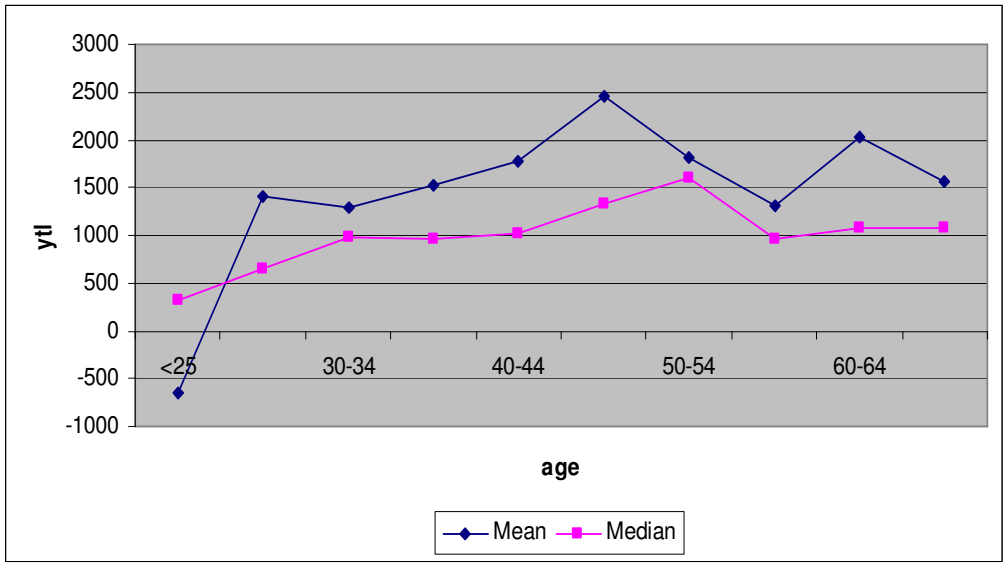

Figure 3.7: Median and Mean Saving by Age Groups (2006 prices)

To assess the effect of income distribution on saving, a cross tabulation of saving by age and income quartiles is reported in Table 3.8 and plotted in Figure 3.8. The median saving for the lowest income group is negative for all ages except for 60-64.

In addition, saving levels increase in old ages for the first quartile. For the second and third quartiles, we observe weakly hump-shaped profiles. The hump-shape is particularly weak for the second quartile, the profile is almost flat. The hump shape is more pronounced for the households with income in the highest income quartile, similar to that in the U.S. given in Attanasio (1994). The median saving of the fourth quartile increases strongly with age up to ages 45-49 and then declines steadily. The saving of this quartile is quite higher than the rest of the quartiles. According to the Figure 3.8, the distance between the forth and the third quartile is higher even from the distance between the third and the first quartile.

Figure 3.8 presents evidence that is common to the findings of cross-sectional data for many countries, i.e. saving is an increasing function of disposable income. However, the difference between the savings of poor and rich may reflect the differences in transitory income shocks, not behavioral differences. Households in the lowest income quartiles could face negative transitory income shocks and reduce saving in order to smooth consumption according to the life-cycle permanent-income theory. Similarly, households in the high income quartiles could face positive transitory income shocks and may increase savings to absorb the windfall. Therefore, the positive relation between savings and income presented in Figure 3.8 may be due to the use of current income rather than permanent income to define quartiles.

Table 3.8: Median Saving by Age Group and Income Quartile

	Income Quartiles			
Age	**1**	**Age**	**1**	**Age**
<25	-556	<25	-556	<25
25-29	-636	25-29	-636	25-29
30-34	-785	30-34	-785	30-34
35-39	-965	35-39	-965	35-39
40-44	-854	40-44	-854	40-44
45-49	-875	45-49	-875	45-49
50-54	-136	50-54	-136	50-54
55-59	-916	55-59	-916	55-59
60-64	20	60-64	20	60-64
>64	-59	>64	-59	>64
All	-430	All	-430	All

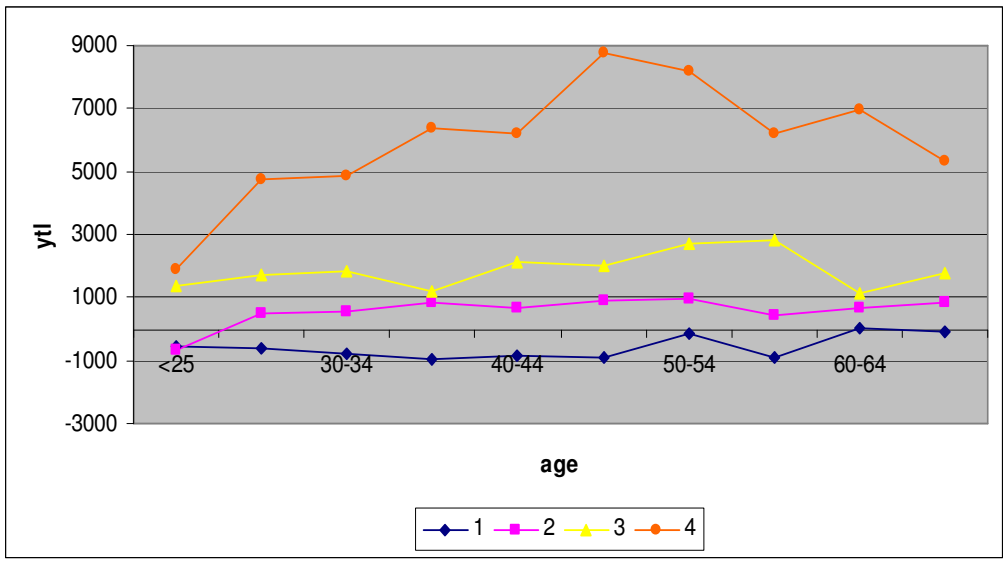

Figure 3.8: Median Saving by Age Group and Income Quartile

As mentioned above, the difference in savings of rich and poor households may reflect the differences in transitory income shocks they receive. In order to characterize the relation between saving and income, households in the sample should be divided according to their permanent income rather than current income. In this respect, educational attainment of the household head, which is correlated with permanent income and uncorrelated with transitory shocks, is used as an instrumental variable. In Table 3.9 age-profiles of median saving are reported by education group. These figures are plotted in Figure 3.9.

Saving is increasing with education as can be seen in Figure 3.9. The saving profile of college graduates is at a much higher level than the rest of education groups, similar to the highest income quartile (Figure 3.8). However, this time the hump shape disappears for this group; the age-profile of median saving for college graduates is almost flat. Unlike the case for college graduates, median saving increases with age until ages 50-54 for the three lower educational attainment groups: less than primary, primary and high school groups. After ages 50-54, the profile keeps increasing for the less than primary school group, is flat for the

primary school group, and declines for the high school group, yielding this group a hump-shaped profile.

Table 3.9: Median Saving by Age and Education Groups

Age	Educational Attainment			
	Less than Primary	Primary	High School	College
<25	-588	333	-82	4606
25-29	-398	525	692	3368
30-34	32	445	1453	2635
35-39	-436	590	1462	4161
40-44	567	564	1466	3718
45-49	417	1082	1930	3782
50-54	588	1326	2455	3944
55-59	431	666	1806	5446
60-64	1059	1047	1939	1082
>64	678	1416	1446	5708
All	594	803	1467	3762

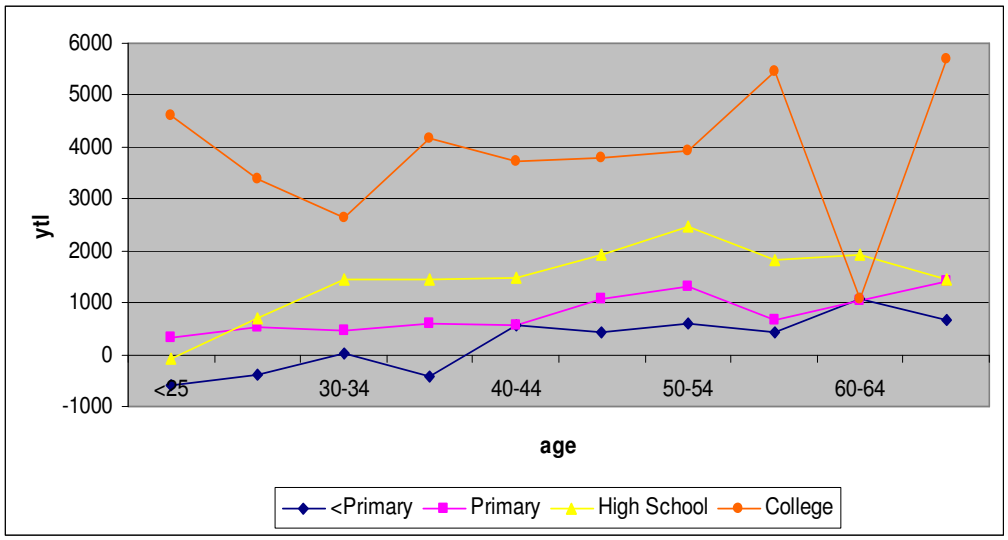

Figure 3.9: Median Saving by Age and Education Groups

3.4. Saving Rate

Saving rate is defined as the ratio of saving to income. Table 3.10 reports the median and the mean saving rates by age, which are plotted in Figure 3.10. The median saving rate for the whole sample is found to be 10 percent. For all age groups, the median saving rate is positive. According to the table, median saving is the lowest for the youngest households (2 percent), it increases to 8 percent after age 25 and stays around this level until the ages 45-49. The peak point of the median saving rate profile is observed for the household heads older than 64 (13%). The saving rates remain relatively high even at old ages, which could be due to the bequest motive, health risk and lifetime uncertainty[12]. Another reason of the high saving rates observed at old ages could be that, a significant share of the old people in Turkey are not covered by any social security system. Moreover, the family composition observed at old ages could also be a reason. The families with old household heads could have children at working-ages, and these children could be saving for their future.

When we look at the data for US, it is observed that saving rate decreases at old ages, this gives the profile a hump shape. However, the saving rate profile of Turkey exhibits a monotonically increasing trend similar to that of Japan (Takayama and Kitamura, 1994). Poterba (1994) summarizes the age-specific saving rates of six developed countries: UK, US, Japan, Germany, Italy and Canada. The saving rates of Italy and Japan are much higher than the rest of the countries, which he names as low-saving countries[13]. In that sense, according to Table 3.10, Turkey could also be named a low-saving country.

[12] Saving rate is above ten percent for ages older than 60.
[13] The saving rates of Italy and Japan are above 30 percent for most of the age groups.

Table 3.10: Median and Mean Saving Rate by Age Group (2006 prices)

Age	Median Saving Rate	Mean Saving Rate
<25	0.02	-0.11
25-29	0.08	-0.04
30-34	0.08	-0.02
35-39	0.08	-0.08
40-44	0.09	-0.02
45-49	0.09	-0.01
50-54	0.12	-0.02
55-59	0.08	-0.07
60-64	0.10	0.01
>64	0.13	0.02
All	0.10	-0.03

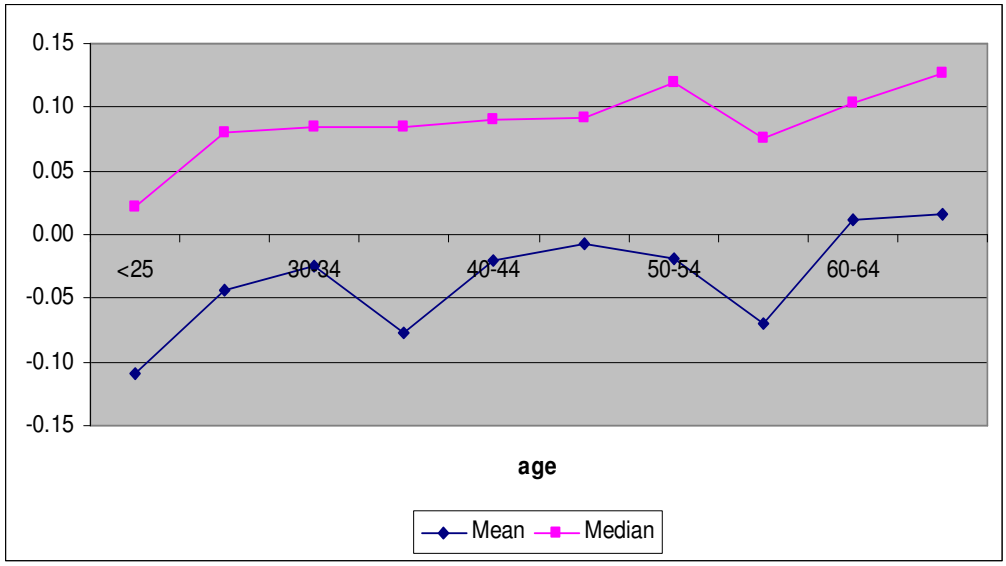

Figure 3.10: Median and Mean Saving Rate by Age Group (2006 prices)

In order to compare our findings with some other developing countries, I have calculated the saving rate by dividing the mean household saving to mean household income, as well. In this case, the 10.2% saving rate of Turkey is higher than that of Peru (9.6 percent) and Mexico (9.5 percent) (Attanasio and Székely, 2000), but lower than the rate in Taiwan (49.1 percent), Thailand (29.7 percent) (Attanasio and Székely, 2000), Korea (16.3 percent) (Hong et al. 2002) and New

Zealand (around 30 percent) (Gibson and Scobie, 2001). Attanasio and Székely (2000) showed that one of the main reasons of the huge difference in saving rates between the Asian countries and Latin American countries is that, larger shares of the total population in Latin American countries are in the 0-15 age range similar to Turkey. In order to investigate the role of the demographics in the differences between the saving rates of Asian countries and Turkey, first I used the population weights of Thailand[14] to calculate the weighted saving rate of Turkey and then I calculated the weighted saving rate of Thailand by using population weights of Turkey. When I compare these weighted saving rates, I found that the difference in saving rates between two countries declined from the original 38 points to 22 points, which gives us the idea of the importance of differences in demographic structure.

Similar to the previous variables, saving rates are also analyzed by income groups. The median saving rate by income quartiles are reported in Table 3.11 and plotted in Figure 3.11. When the whole sample is considered, we see that the saving rate of the poorest income quartile is -13 percent. An increase in income shows its effect on the saving rate as well: while the saving rate for the second quartile is 6%, it increases to 12% for the third quartile, and to 25% for the richest quartile. For the lowest income group, saving rate is negative for almost all age groups[15], similar to those of developed countries such as UK and US. Moreover, the median saving rate of that group presents an increasing trend with age. For the second quartile, the median saving rate is negative only for the youngest age group. After age 25, the saving rate profile of this group is rather flat. The saving rate profile of the third quintile is also flat. When the richest quartile is considered, it is observed that saving rate lies above 20 percent for almost all age groups with an increasing trend until ages 45-49.

[14] The population weights are the shares of age groups relative to total population and the weights of Thailand are obtained from Attanasio and Szekely (2000).

[15] The only one exception is the saving rate for the 60-64 age group which is 0.004.

Another point that is worth mentioning in Figure 3.11 is the relative closeness of the saving rates for the second and the third quartiles. Moreover, the highest increase in saving rate is observed between the lowest income quartile and the second quartile. Those two features of saving rate profiles of income quartiles for Turkey are similar to that of Japan.

Table 3.11: Median Saving Rate by Age Group and Income Quartile

	Income Quartile			
Age	**1**	**2**	**3**	**4**
<25	-0.13	-0.08	0.12	0.14
25-29	-0.13	0.05	0.13	0.25
30-34	-0.16	0.05	0.12	0.20
35-39	-0.17	0.08	0.08	0.24
40-44	-0.13	0.06	0.13	0.23
45-49	-0.13	0.06	0.10	0.30
50-54	-0.02	0.07	0.15	0.27
55-59	-0.13	0.03	0.17	0.23
60-64	0.00	0.07	0.08	0.25
>64	-0.01	0.10	0.15	0.26
All	-0.07	0.06	0.12	0.25

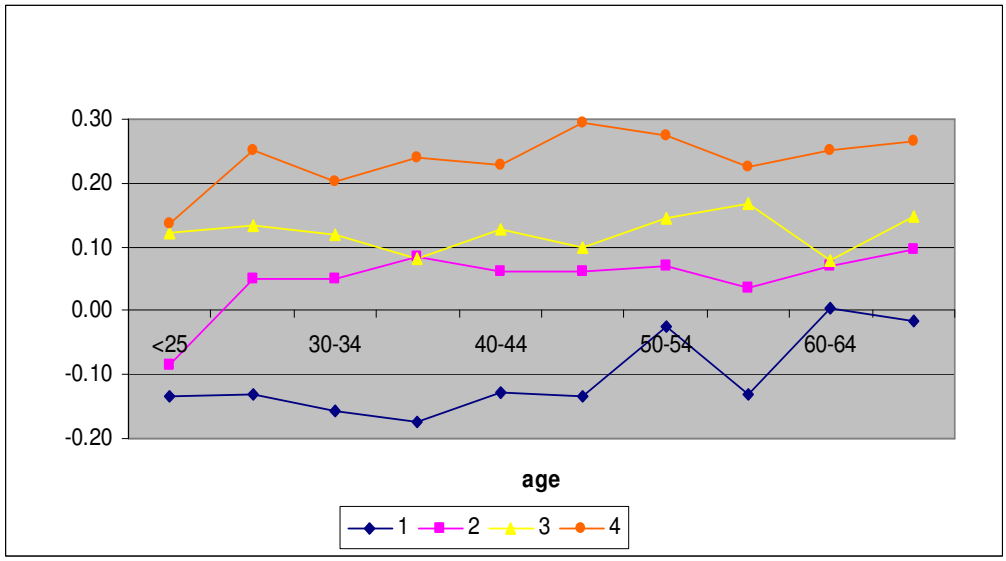

Figure 3.11: Median Saving Rate by Age Group and Income Quartile

Finally, I analyze saving rate by dividing the sample according to the educational attainment of the household heads, which is used as an instrument for permanent income as mentioned before. The median values of saving rates for each education and age group are given in Table 3.12 and plotted in Figure 3.12. For the three lower educational attainment groups, saving rates present an increasing trend with age. Saving rates are found to be negative for the first two age brackets of the less than primary group[16]. The most increasing saving rate profile belongs to this group with a peak at ages 60-64. The median saving rate profiles of primary school graduates and high school graduates both have an increasing trend; however, their trends are not as strong as that of the lowest educational attainment group. The saving profile of college graduates is substantially flat across the life-cycle.

Table 3.12: Median Saving Rate by Age and Education Groups

Age	Educational Attainment			
	Less than Primary	Primary	High School	College
<25	-0.15	0.02	-0.01	0.27
25-29	-0.06	0.06	0.07	0.20
30-34	0.00	0.05	0.10	0.16
35-39	-0.05	0.06	0.10	0.20
40-44	0.10	0.06	0.10	0.18
45-49	0.07	0.08	0.10	0.14
50-54	0.05	0.11	0.16	0.16
55-59	0.07	0.06	0.12	0.23
60-64	0.17	0.09	0.11	0.08
>64	0.10	0.15	0.11	0.30
All	0.09	0.08	0.11	0.18

An important result that emerges from Figure 3.12 is that saving rate profiles become flatter as the educational attainment increases similar to that of the US. When we compare our findings with that of Attanasio and Székely (2000), it is seen that the most significant difference is observed for the saving rates of the most

[16] The cell sizes of less than primary and college graduate groups for the youngest age bracket are very small; 4 and 5, respectively.

educated group. While the saving rate of the that group is 16% in Turkey, it is 50% in Taiwan, 43% Thailand, 24% in Peru and 16% in Mexico.

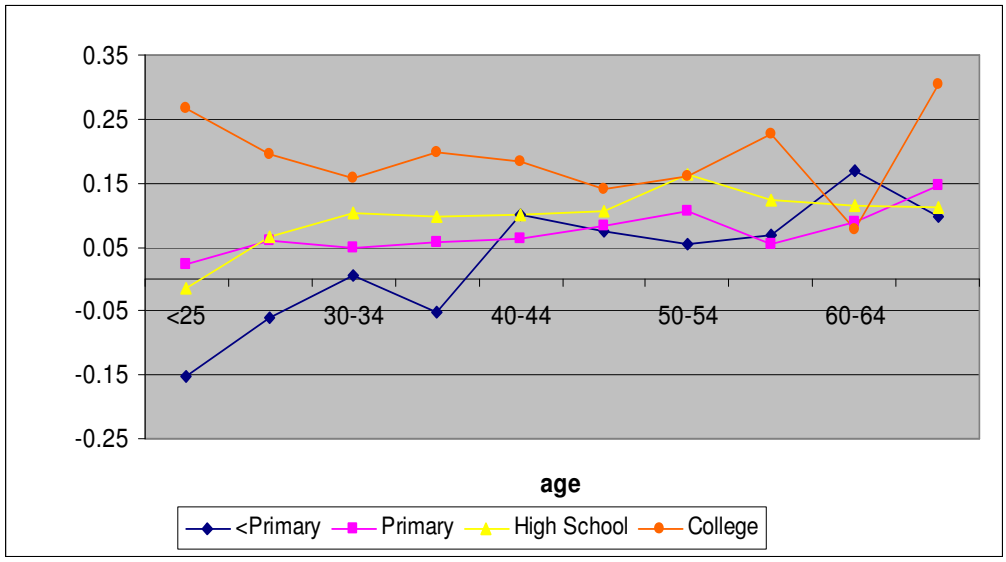

Figure 3.12: Median Saving Rate by Age and Education Groups

3.5. Saving to Consumption Ratio

In addition to the saving to income ratio, saving to consumption ratio is also analyzed. Attanasio (1994) reports a number of advantages of using this variable. First, the variability of saving to consumption ratio is less than the variability of saving to income ratio. For instance, when income goes to zero, the saving to income ratio will diverge to minus infinity, whereas saving consumption ratio converges to minus one. Second, in theory, consumption reflects variations to permanent income, and therefore it is less affected by transitory shocks than is current income. Finally, saving to consumption ratio is also defined at zero income[17].

[17] It should be noted that, households with zero income are omitted from the sample.

The ratios of median saving to consumption by age group are given in Table 3.13 and plotted in Figure 3.13. Table 3.14 and Figure 3.14 present the age profiles of saving to consumption ratios by income quartiles. Saving to consumption profiles by education groups are reported in Table 3.15 and plotted in Figure 3.15. The results that emerge are substantially similar to saving to income ratio analysis. Therefore, it does not deserve further comment.

Table 3.13: Median and Mean Saving Consumption Ratio by Age Group

Age	Median Saving Consumption Ratio	Mean Saving Consumption Ratio
<25	0.02	0.04
25-29	0.09	0.17
30-34	0.09	0.17
35-39	0.09	0.17
40-44	0.10	0.18
45-49	0.10	0.22
50-54	0.14	0.24
55-59	0.08	0.23
60-64	0.11	0.26
>64	0.15	0.27
All	0.11	0.21

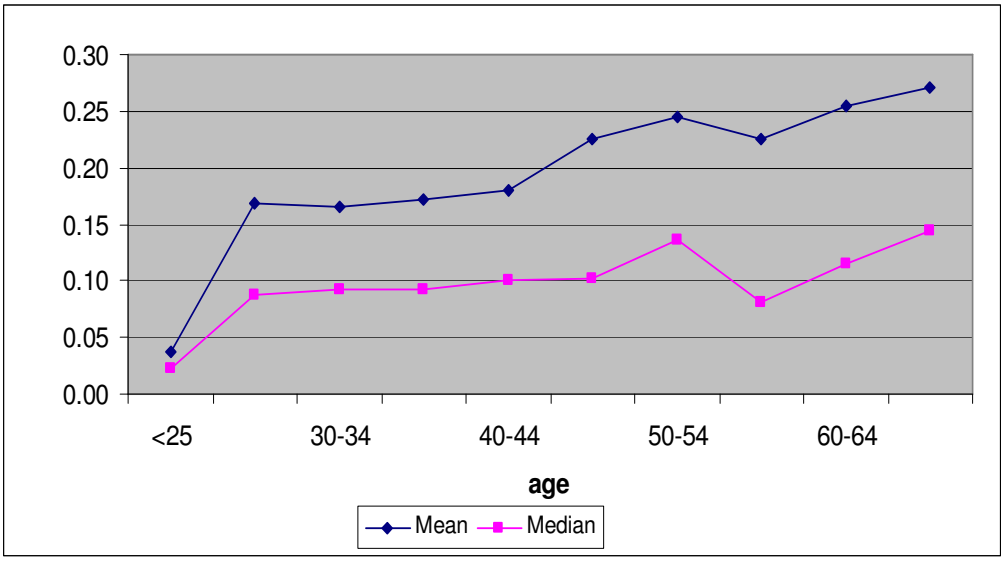

Figure 3.13: Median and Mean Saving Consumption Ratio by Age Group

Table 3.14: Median Saving Consumption Ratio by Age Group and Income Quartile

	Income Quartile			
Age	**1**	**2**	**3**	**4**
<25	-0.12	-0.08	0.12	0.14
25-29	-0.12	0.05	0.13	0.25
30-34	-0.14	0.05	0.12	0.20
35-39	-0.15	0.08	0.08	0.24
40-44	-0.11	0.06	0.13	0.23
45-49	-0.12	0.06	0.10	0.30
50-54	-0.02	0.07	0.15	0.27
55-59	-0.12	0.03	0.17	0.23
60-64	0.00	0.07	0.08	0.25
>64	-0.01	0.10	0.15	0.26
All	-0.07	0.06	0.12	0.25

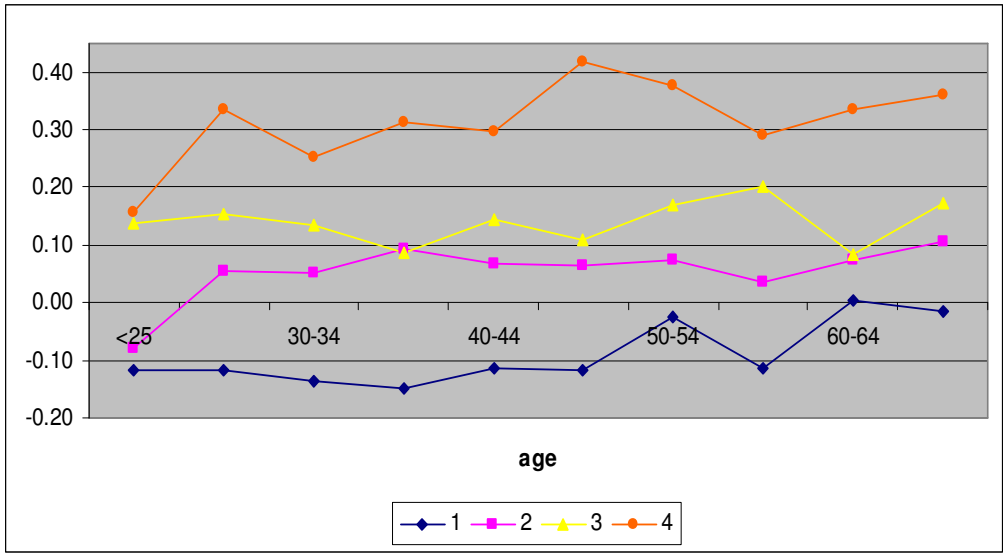

Figure 3.14: Median Saving Consumption Ratio by Age Group and Income Quartile

Table 3.15: Median Saving Consumption Ratio by Age and Education Groups

Age	Educational Attainment			
	Less than Primary	Primary	High School	College
<25	-0.13	0.02	-0.01	0.37
25-29	-0.06	0.07	0.07	0.24
30-34	0.00	0.05	0.11	0.19
35-39	-0.05	0.06	0.11	0.25
40-44	0.11	0.07	0.11	0.22
45-49	0.08	0.09	0.12	0.16
50-54	0.06	0.12	0.20	0.19
55-59	0.07	0.06	0.14	0.29
60-64	0.21	0.10	0.13	0.08
>64	0.11	0.17	0.13	0.43
All	0.10	0.09	0.12	0.23

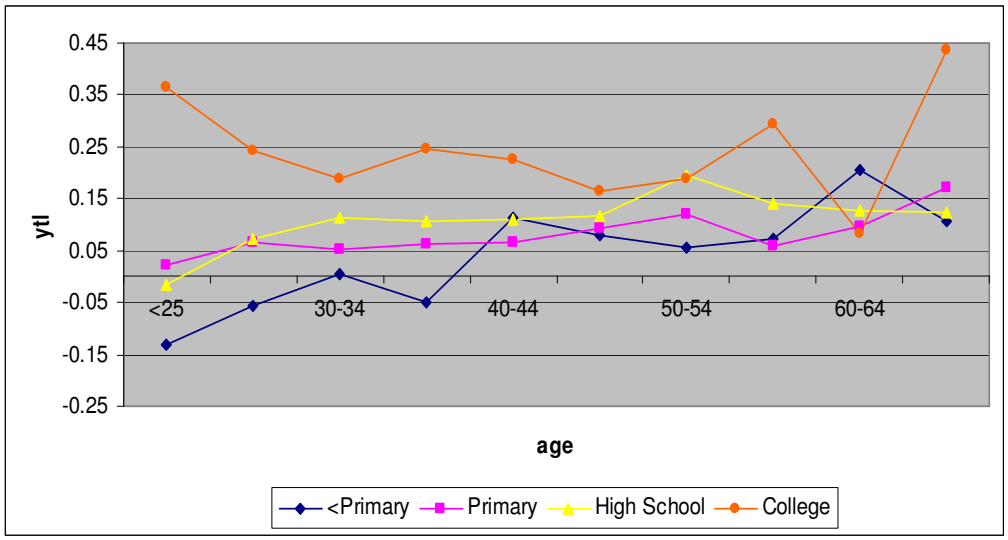

Figure 3.15: Median Saving Consumption Ratio by Age and Education Groups

3. 6 Time Series Comparisons

In this part of the study, changes in income, consumption and saving over time from 2002 to 2006 are examined. The definitions of the variables are the same as those in the previous part. The analyses are based on the comparison of the age-profiles of the variables of interest for the available survey years. In order to adjust for inflation, figures are obtained using 2002 prices.

The first variable to be analyzed is again income. Figure 3.16 presents the median income by age for the years 2002-2006. The income profiles for 2002 and 2003, the first two years after the 2001 crisis, are very similar. An increase in income is observed in 2004, and a further increase in 2005. The increase in income between 2003 and 2004 is significant especially for the younger age groups. For instance, compared to the year 2003, while the increase is 20% for the 30-34 age group and 11% for the 40-44 age group; it is 8% for the 50-54 and 60-64 age groups. On the other hand, the increase in income from 2003 to 2005 is similar for all ages. Household median income does not exhibit much increase from 2005 to 2006.

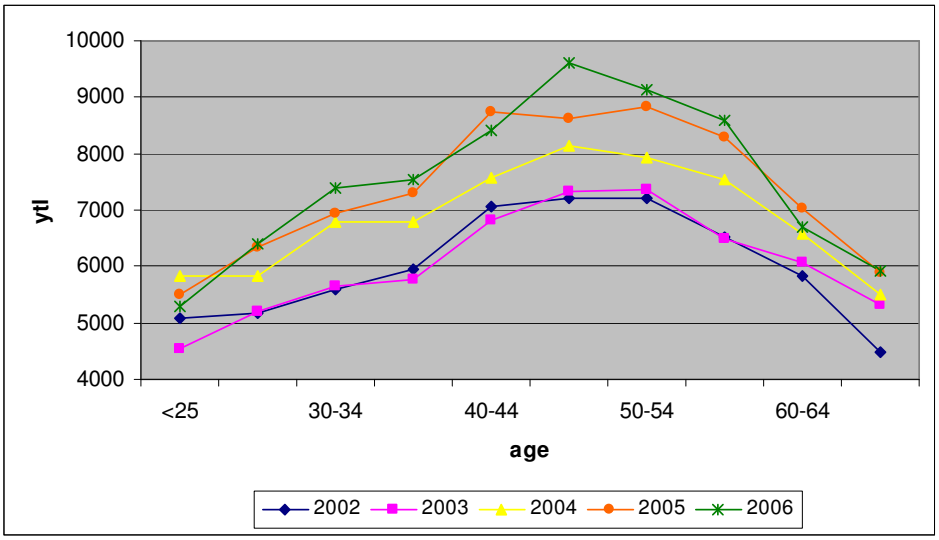

Figure 3.16: Median Income Profiles for Years 2002-2006 (2002 prices)

The median consumption profiles for the years 2002-2006 are plotted in Figure 3.17. When we compare the profiles for years 2002 and 2003, it is seen that 2003 consumption levels are a bit lower up to age 60. However, as it is shown in Figure 3.16, the income levels are quite close to each other during these two years.

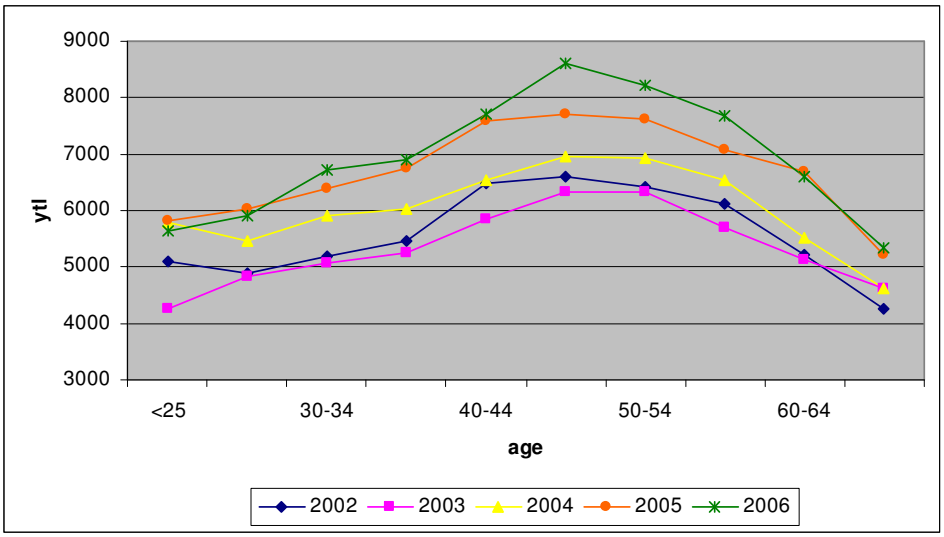

Figure 3.17: Median Consumption Profiles for Years 2002-2006 (2002 prices)

Parallel to the increase in income, consumption increased in 2004, and again this increase was significant especially for the younger age groups. The increase in consumption in 2004 was around 10 to 15 percent for the age groups between 25 and 60. In year 2005, the median consumption level increased further for all age groups, as did income. This increase was around ten percent or above for almost all age groups. Another important feature of this increasing consumption in 2005 is that, it is higher than the increase in income for most of the age groups. For the most recent survey year, 2006, we see an increase in consumption between the ages of 45 and 59, but not for other age groups.

Median saving profiles for the years 2002- 2006 are presented in Figure 3.18. If we consider the shapes, saving profiles of the years 2003-2006 seem similar; however, 2002 profile is slightly different. There is a significant increase in savings until ages 40-44 for all years. After this age, however, the saving profile in 2002 exhibits a

declining profile. On the other hand, for the other years, savings keep increasing until mid 50s, and afterwards they exhibit flat or slightly decreasing profiles.

In 2003, households with a household head that is older than 45 save more than they did the previous year. In 2004, parallel to the large increase in income, the saving profile shifts upwards and, as a result, saving increases for almost all age groups at that year.

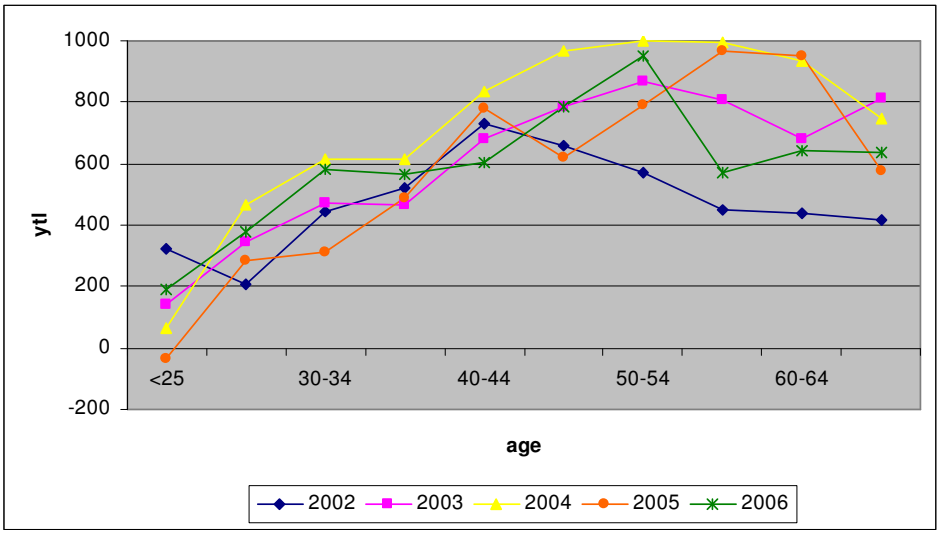

Figure 3.18: Median Saving Profiles for Years 2002-2006 (2002 prices)

The most interesting fact observed from the figure is that although income increases from 2004 to 2005, saving declines. Median household saving levels in 2005 are found to be close to the ones in 2003, in spite of the around 20 percent increase in income for all age groups from 2003 to 2005. 2006 savings are relatively high at younger ages and relatively low at older ages compared to savings in the other survey years.

In order to compare the saving rate changes in time, median saving rates by age for the available survey years are plotted in Figure 3.19. From 2002 to 2003, there is a significant increase in saving rates for all age groups older than 45, which is consistent with the saving profiles given in Figure 3.18. Saving rates in 2004 are

slightly higher than those in 2003 for almost all age groups. This means that the higher saving levels in 2004, observed in Figure 3.18, are resulting from not only higher income levels but also slightly higher saving rates.

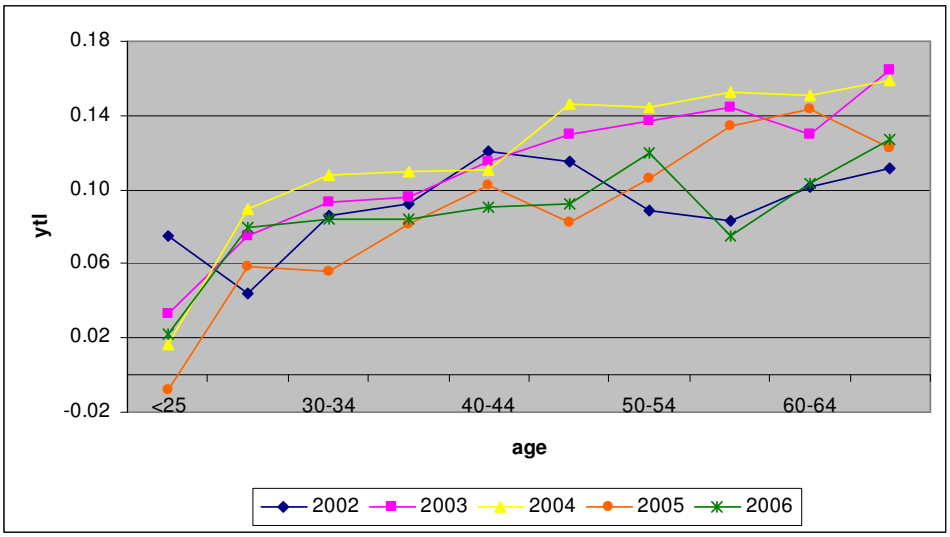

Figure 3.19: Median Saving Rate Profiles for Years 2002-2006 (2002 prices)

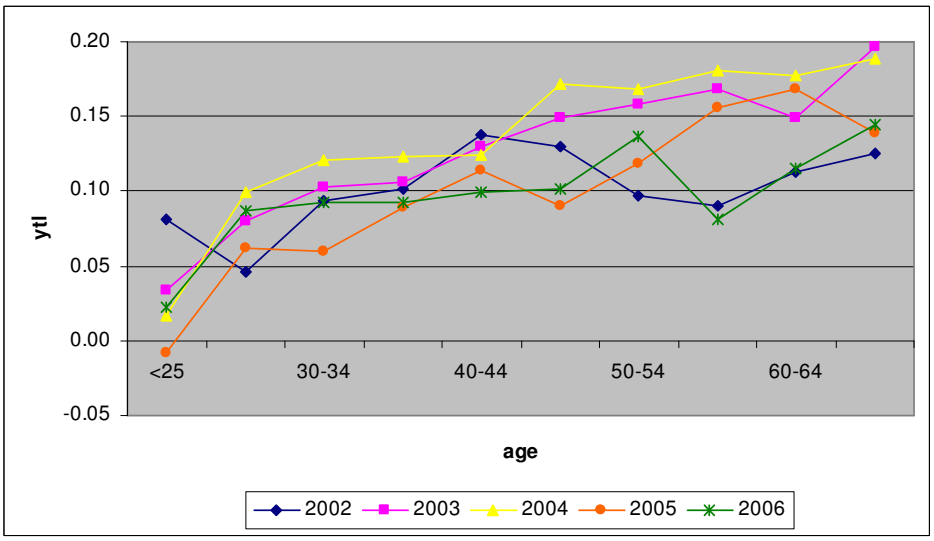

Figure 3.20: Median Saving to Consumption Ratio Profiles for Years 2002-2006 (2002 prices)

The saving rates in 2005 and 2006 are much lower than the corresponding rates in 2004. For the ages younger than 50, the saving rates in 2005 are even lower than the ones in 2002. The fall in saving rates from 2004 to 2005 is similar for all age groups, whereas compared to 2004 levels, saving rates in 2006 are lower especially for older age groups.

Finally, median saving to consumption ratios by age for the same five years are given in Figure 3.20. Since the figure is very similar to the previous one, it does not deserve further comment.

3. 7 Concluding Remarks

According to the cross-sectional analyses, income age profile is hump-shaped, in other words income is increasing with age up to 45-49 age group and declines afterwards. When the analyses are deepened by dividing the sample according to the income quartiles it is found that income inequality does not change so much by age. Analyses conditional on educational attainment show that the hump-shape of income for the whole sample is rotated counterclockwise for all the education groups. This indicates the importance of cohort effects, which means that a difference between groups is due to variables associated with their birth period, in Turkey.

Consumption age profiles are hump-shaped as well. However, the consumption profile is flatter than the income profile. As it is expected, consumption is found to increase with income for all age groups which could be accepted evidence against the life-cycle model. A deformed hump-shaped age profile is found for the savings of Turkish households. Median saving is positive regardless of household head's age; even for households with very old and very young heads. Similar to the findings of cross-sectional data for many countries, saving is found as an increasing function of disposable income. However, this situation may reflect the differences in transitory income shocks, not behavioral differences. In order to characterize the

relation between saving and income, households in the sample are divided according to their permanent income rather than current income by using educational attainment of the household head. In this case, saving is found to be increasing with education.

The age-profile of saving rate exhibits a slightly increasing trend with age which could be due to lower dependency ratio, bequest motive, health risk and lifetime uncertainty. While the bequest motive makes the old households to save for their children, health risk forces them to save for possible health expenditures in future. Moreover, if the old families prefer to live with their working children, the share of people earning income is going to be higher, in other words; the dependency ratio will be lower. The existence of this situation can lead to higher saving rate. When we condition on the education level, we find a more prominent increasing trend in age-saving profiles of all but college graduates. Moreover, the saving profiles become flatter as the educational attainment level increases. As consumption reflects variations to permanent income and therefore it is less affected by transitory shocks than do the current income, analyses were also carried out by using saving to consumption rate. The results for that variable are substantially similar to saving to income ratio analysis.

Changes in income, consumption, and saving through the years 2002-2006 are investigated as well. Income profiles in all years have the same hump-shape that peaks at late 40's and early 50's. Income levels in 2002 and 2003 were very similar. However, there was an increase in real income in 2004 and a further increase in 2005 for all age groups. In 2006, the rising trend of income stopped. The ways consumption profiles vary over time are very similar to that for income profiles. However, the increase in the level of consumption in 2004 is not as high as that in income; as a result, saving levels increase in 2004. In 2005, on the contrary, since the increase in consumption is higher than the increase in income, saving levels fall. Median household saving levels in 2005 are found to be close to the ones in 2003, in spite of the significant increase in income for all age groups from 2003 to 2005.

Examining the change in the saving rates over time, I find that in 2004 saving rates are higher than those in all other years for almost all age groups. In other words, higher saving levels in 2004 were brought about by not only higher earnings but also a higher propensity to save. Despite higher income levels in 2005 and in 2006 compared to 2004, I find that saving rates are lower. In fact, the saving rates in 2005 and 2006 are even lower than those in 2003 for almost age groups despite the fact that income levels in 2003 were even lower than those in 2004.

CHAPTER 4

COHORT ANALYSES

4.1 Method

In the first part of the study, cross-sectional analyses are used to investigate the life-cycle patterns of income, consumption and saving. However, the use of single cross-section provides only a useful snapshot especially for the variables that present dynamic behavior as in the case of consumption and saving. What we are looking at by using cross-sections is the value of the variable of interest at different ages for the households that were born at different dates and faced with different lifetime experiences in terms of education, income and etc. These other variables could affect the shape and level of the life-cycle profiles. Therefore, in order to obtain "pure" age profiles we have to control for these other variables. For example, with positive real wage growth, people born later have higher lifetime earnings and this situation makes the cross-sectional income trajectories high among the young and low among the old households[18]. Therefore, the cross sectional profiles are rotated clockwise compared to the "true" age profile.

In order to overcome this problem we need to follow an individual over life-cycle, in other words, panel data is needed. However, Household Budget Survey that we are going to work is not a panel. An alternative is to exploit the repeated nature of the survey and build a synthetic panel (pseudo panel). This approach is based on grouping techniques and it was first used within life-cycle models by Browning, Deaton and Irish (1985). The idea behind this approach is; rather than following the

[18] As according to the life-cycle model consumption is a function of lifetime resources, the same problem occurs while graphing the cross sectional age profiles of consumption.

same individual over time, one can follow the average behavior of a group of individuals as they age[19]. Within the life cycle framework, the natural group to consider is a "cohort", that is individuals born in the same period. This involves, for instance, considering all the individuals aged 25 in 2002, those 26 in 2003 and so on to form the first cohort; those aged 26 in 2002 and 27 in 2003 and so on to form the second cohort, etc. Having formed these groups for every survey year, one can average the variable of interest and therefore form the pseudo panels. Even if the individuals used to compute the means in each year are not the same, they belong to same group and therefore the dynamic behavior of the average variables could be studied. The time dimension of the cohorts would be limited with the available survey years, therefore I will integrate the profiles of different cohorts in order to construct lifetime profiles.

Both synthetic panels and panel data have time series of observations on units, with units defined as individuals or cohorts. It is not possible to observe the dynamics within the cohorts as opposed to panel data. However, apart from dynamics, synthetic panels can do whatever panel data do, such as controlling the unobservable fixed effects. Indeed, it has a number of advantages over panel data. Many panels suffer from attrition and so face the risk of being unrepresentative over time. Since the sample is redrawn every year, there is no risk of attrition in synthetic panels. The use of cohort data reduces the effects of measurement error since the observation that is tracked over time is an average or some other moments (Deaton, 1997). In addition to those advantages, semi-aggregated pattern of synthetic panels brings out the relationship between household behavior and national aggregates. What makes it more attractive relative to the aggregate data is the direct control of the aggregation process. If for example, a nonlinear function of the data is in interest, such as logarithm, the transform can be made prior to averaging[20]. A final

[19] In addition to the mean, alternative measures of location such as median or other quintiles can be used while constructing the synthetic panels.

[20] Attanasio and Weber (1993) showed that, using log of the mean (as in the aggregate data studies) instead of mean of the log leads to bias in the test of the life-cycle hypothesis by using Euler equation estimates.

advantage of pseudo-panel is that, it allows combining of different surveys on different households. For example, it is possible to study saving by employing income from one survey and consumption from a totally different survey.

However, there are some practical problems with the use of synthetic panels. The assumption of constant cohort population could be hard to maintain. For example, if the richer households live longer, cohort averages of income for older cohorts will increase. In order to overcome this problem, maximum age is restricted to be 70 in this study. A more serious problem occurs if we choose to work with households instead of individuals and define the cohorts of households by the age of the head[21]. Reorganization of families due to the dissolution and reformation could lead to this problem. To give an example, we can think of old households who prefer to live with their children and therefore become young households in the subsequent surveys.

Most of the analysis in this section is based on graphics. The life-cycle profiles of variables that we are interested are identified by plotting the average value for each cohort against age. It would be possible to track the age profiles since different cohorts are observed over different parts of their life-cycles. Moreover, if the period understudy is longer than the interval used to define a cohort, different cohorts would be observed at the same age although, at different points in time. However, estimated cohort averages (or other moments) could be affected from several factors. The age effects (give the typical age profile), cohort effects (give the secular trends that lead to differences in the positions of age profiles for different cohorts) and year effects (give the aggregate effects that synchronously but temporarily move all cohorts off their profiles) are important.

The identification process is based on a life-cycle model given in Deaton (1997). Suppose that individual i is born in year b observed in year t. If there is no uncertainty, according to the life-cycle model, the individual's consumption level is

[21] As mentioned above, the unit of observation in this study is chosen as the households since the consumption and therefore saving decisions are taken on household basis.

proportional to lifetime resources with a factor of proportionality that depends on age, so that

$$c_{ibt} = g_i(t-b)W_{ib} \tag{1}$$

where W is lifetime wealth and (t-b) is age. According to the model, lifetime wealth does not vary over time and we can think of the household having its lifetime resources set at birth and then choosing how to allocate consumption over time according to its preferences as presented by the function g. Taking logarithms and then averaging over all households in the cohort born at time b and observed at t makes, we get

$$\overline{\ln c_{bt}} = \overline{\ln g}(t-b) + \overline{\ln W_b} \tag{2}$$

therefore the average of the logarithms of individual consumptions is the sum of two components, the first depends only on age (covers the preferences about intertemporal choice), and the second only on cohort (covers the lifetime wealth levels of each cohort) . As a result (2) could be estimated by regressing average log of cohort consumption on a set of age and cohort dummies[22]. In order to decompose the time effects, year dummies could be added to the model and the equation to be estimated becomes:

$$y = \beta + A\alpha + C\gamma + Y\theta + u \tag{3}$$

where A is a matrix of age dummies, C is a matrix of cohort dummies and Y is a matrix of time dummies. β, γ, α, θ are the parameters to be estimated. In order to estimate the model, we have to drop one column from each of the matrices since the sum of columns is a column of ones, which is already included as the constant term.

[22] This decomposition process could be applied to other contexts where there exists no such theory such as analyses of income.

However, dropping these columns is not sufficient for estimation of (3) because there is an additional linear relationship across the three matrices. When we know the date and birth date of the cohort, we can infer the cohort's age. In order to overcome this perfect collinearity problem, we have to set additional restrictions on parameters or find some other ways of solving the identification problem. For example, productivity growth could be a proxy for cohort effects (see Heckman and Robb, 1985 and King and Dicks-Mireaux, 1982). However, using this type of proxies is very restrictive, since we preassume not only that there are cohort effects, but also the specific source of these effects.

Another approach for identification is to set additional restrictions on the parameters. In this study, the method proposed by Deaton and Paxson (1994) is employed. This method is widely used in the literature and in this respect it allows us to compare our findings with the findings of other country studies. Deaton and Paxson (1994) imposed a restriction on year dummies by constraining them to have zero mean and orthogonal to time trend. In other words, growth is attributed to age and cohort effects, and the year effects captures only cyclical fluctuations or business-cycle effects that average to zero over the long run. Considering this restriction, (3) could be estimated by regressing y on dummies for each cohort excluding one, dummies for each age excluding one, and a set of T-2 year dummies defined as follows, from $t = 3,\ldots,T$

$$d_t^* = d_t - \left[(t-1)d_2 - (t-2)d_t\right] \tag{4}$$

where d_t is the year dummy, equal to 1 if the year is t and 0 otherwise. The coefficients of the d_i^* give the third through final year coefficients; by using the fact that all year effects add to zero the first two year coefficients could be calculated.

In this study, cohorts are identified according to their date of births, observed from 2002 through to 2005. While the youngest cohort consists of individuals that are 25 years old in year 2002, 26 years old in 2003 and 28 years old in 2005, the oldest

cohort is consists of individuals that are 67 years old in year 2002, 68 years old in 2003 and 70 years old in 2005. Therefore, all the cohorts are observed for the whole period. Since we have 43 cohorts observed for four survey years, the number of cohort-year cells used in decomposition is 172 with the smallest cell size 43 (for 66 years old in 2005), median cell size 217 and the average cell size 272[23].

4.2 Analysis of Family Composition and Labor Supply over Life-Cycle

4.2.1 Family Formation

As mentioned above, reorganization of families such as preferring an old household to live with his/her children and therefore becoming a young household could affect the results of a life-cycle analysis. Moreover, family formation and household structure are closely related to the consumption and saving decisions. In this respect, it is important to investigate the family formation and household structure.

Firstly, the family formation of Turkish households is analyzed. Figure 4.1 displays the average age of the head where an individual lives against the age of the individual. Therefore, all the individuals in the sample are used. If all the individuals in a given cohort are the household heads, or if the household heads and individuals living in the same household are at the same age, the cohort profile of the average household age would intersect the 45-degree line. Since the headship rates are low at the early stages of life-cycle, cohort profile lies above the 45-degree line. This could state that, some young adults are still living with their parents. The speed with which the profile gets close to 45-degree line shows how early new families are formed. If we think of the older ages, since the old households begin to

[23] Most of the cohort studies define cohorts using five-year definition in order to increase the cell sizes. The availability of only four surveys prevents us to use this definition since in this case we could not observe the different cohorts for the same age which could indicate the possible cohort effects. However, it should be noted that the cell sizes in our study could be considered as high. Even for the smallest cell size, the cohort this cell belongs has an average of 110 observations. For example, Paxson (1996) carried out similar analysis with a cell size of five households for Taiwan.

live with their children, headship rates lies below the 45-degree line. Figure 4.2, Figure 4.3 and Figure 4.4 presents the same graph as in Figure 4.1, however this time for three education groups of the individuals, primary school graduates and below, high school graduates and college graduates, respectively.

According to Figure 4.1, family formation seems to occur at late ages in Turkey. Many young adults are living with their parents. Moreover, figures regarding the education levels states that, there are significant differences across education groups. The less educated individuals seem to live with younger households than do the better educated ones. This could be a way of smoothing consumption for the elderly that are less educated, and with lower income. When we look at highly educated individuals, we see that, they form families at earlier ages and continue to be heads of households at older ages (Figure 4.4).

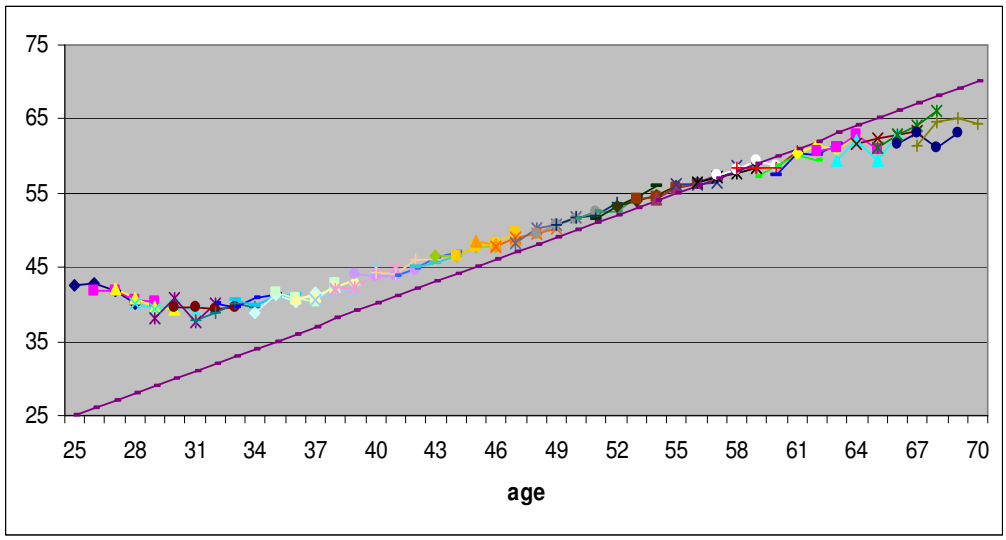

Figure 4.1: Average Age of the Household Head where Individual Lives

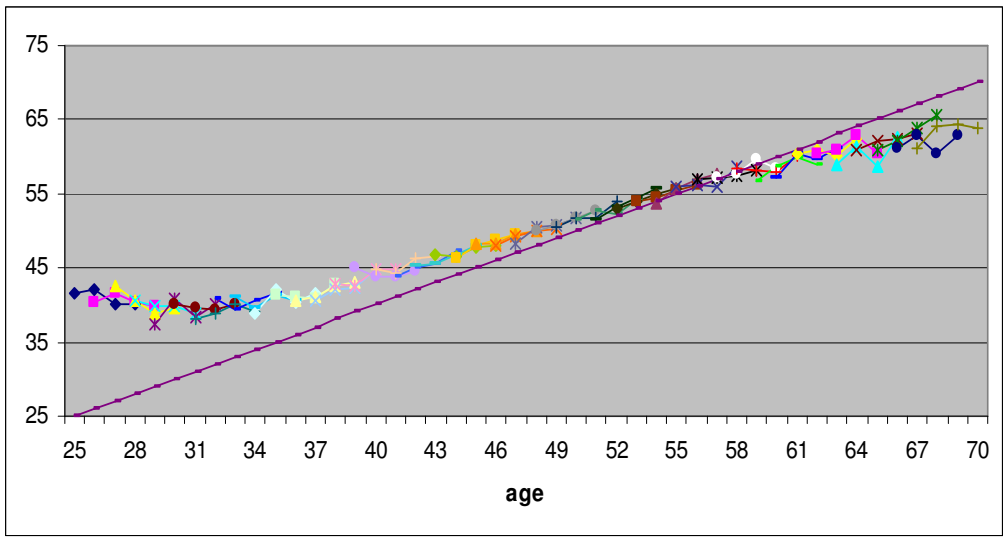

Figure 4.2: Average Age of the Household Head where Individual Lives (Primary School Graduates and below)

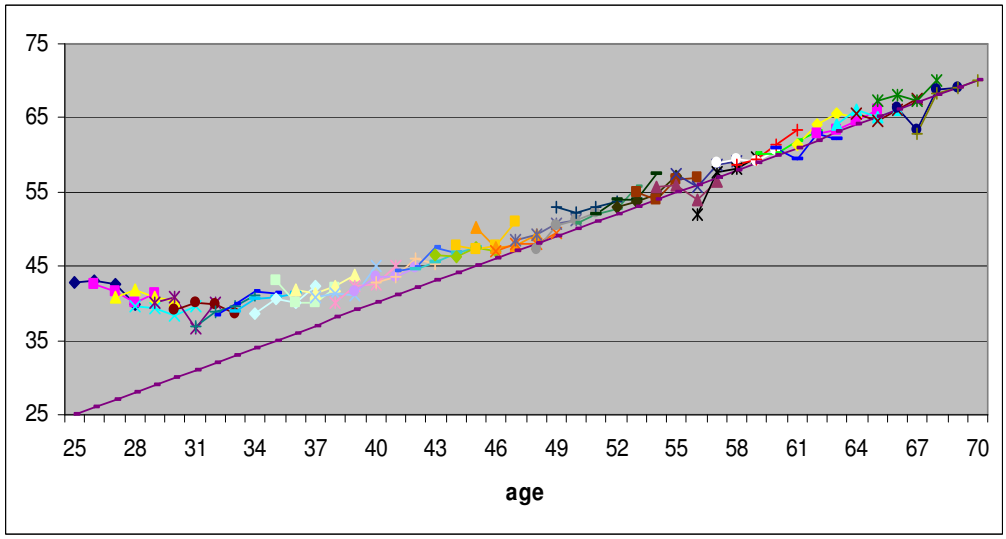

Figure 4.3: Average Age of the Household Head where Individual Lives (High School Graduates)

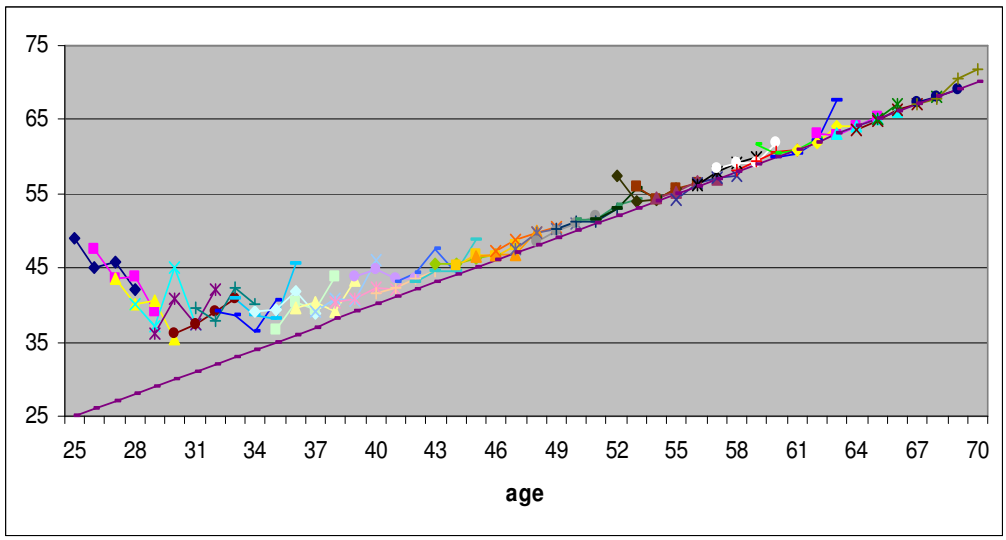

Figure 4.4: Average Age of the Household Head where Individual Lives (University Graduates)

The Household Budget Surveys codes the nuclear families living in the same household. Using this information, the number of nuclear families living in the same household is plotted against the age of the household head in Figure 4.5. Figures 4.6 to 4.8 display the same graph for three education groups.

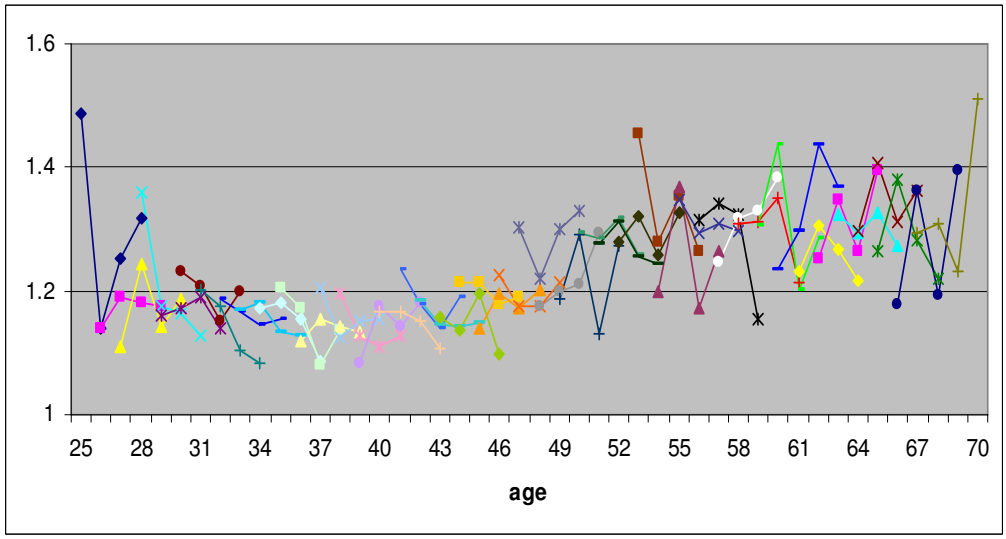

Figure 4.5: Number of Nuclear Families by the Age of the Household Head

It is observed a somewhat u-shaped profile in Figure 4.5 which is consistent with the information provided in Figure 4.1. For the young household heads, high number of families could emphasize the fact that, their parents are living with them[24]. During the middle-ages, family size decreases since it generally consists of father, mother and unmarried children. Following the middle-ages, number of families is increasing with household age. This pattern also stresses the fact of families living together.

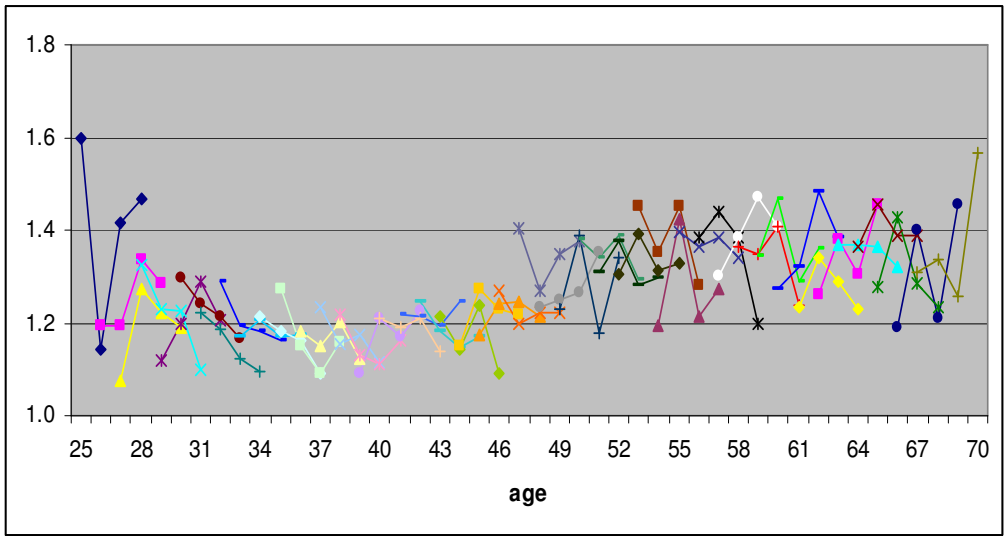

Figure 4.6: Number of Nuclear Families by the Age of the Household Head (Primary School Graduates and below)

According to the education analyses, the u-shaped disappears with the increase in education, the number of families stay relatively constant over the life-cycle. The number of nuclear families living in the same households is found to be higher for the least educated. The low income of less educated group seems to force them to live with their parents. While interpreting the results of income, consumption and saving, these issues regarding the family composition should be kept in mind since the composition is changing over the life-cycle. This situation also creates a problem while constructing the cohorts because even when we are tracing the same

[24] If the parents are not working, then the children could be the household head.

kind of household in repeated cross sections, the composition of the group is changing.

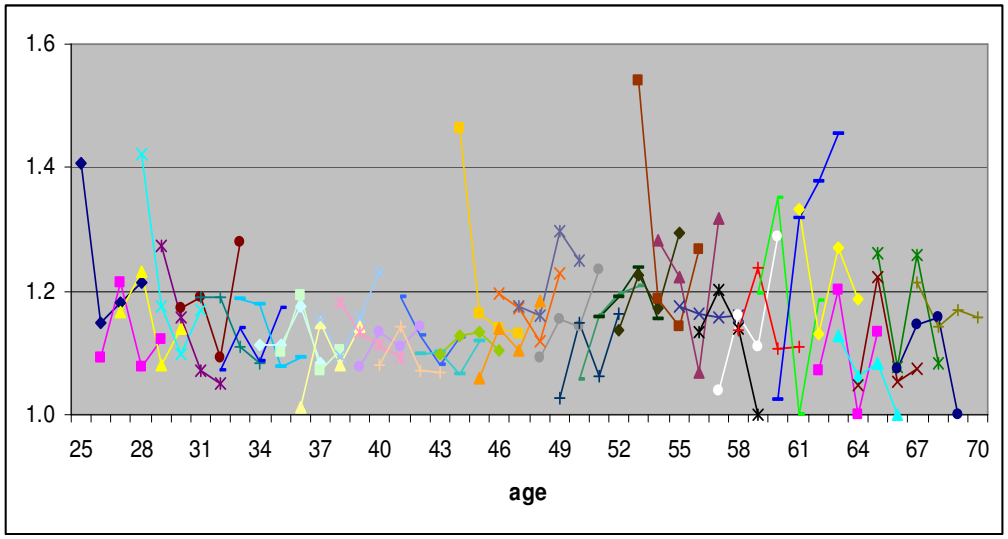

Figure 4.7: Number of Nuclear Families by the Age of the Household Head (High School Graduates)

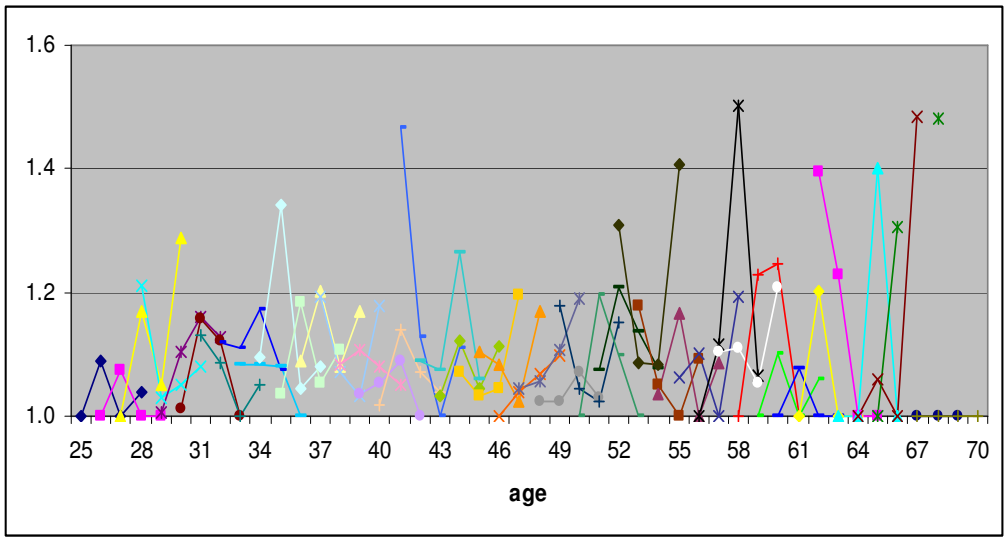

Figure 4.8: Number of Nuclear Families by the Age of the Household Head (University Graduates)

As mentioned above, the construction of cohort is based on the assumption of cohort population is constant which is needed to generate random samples from the same underlying population. In order to check this problem, the structures of young

households are analyzed. Firstly, I try to understand who is marrying at young ages. In year 2005, around 60 percent of the 25 years old, married individuals are the less educated ones and until age 30 this 60 percent share is maintained. On the other hand, the share of university graduates within the 25 years old-married individuals is only 5 percent and it increases to 10 percent at age 30. So, we can conclude that the less educated group is marrying at younger ages. When the household heads are considered, at age 25, the share of less educated household heads are found to be 45 percent and the share of highly educated heads are found to be above 10 percent[25]. If we combine these results, we can state the following: The young household heads are generally the less educated ones, however, a significant portion of the young households are living with their families. The share of married college graduates are low at early ages, however, their share as household heads are higher since they do not prefer to live with their parents, even the unmarried ones. These results, especially the dominance of less educated household heads at early ages also should be kept in mind while interpreting the income, consumption and saving analyses.

4.2.2 Education Levels of the Household Heads

In this section, the education levels of the household heads are investigated. This is important since according to the permanent income theory, consumption and therefore saving is a function of the permanent income and education is a good indicator of it. Figure 4.9 and Figure 4.10 plot the share of the household heads that are high school graduates and university graduates, respectively. Since after 25 years old we do not expect significant changes in the educational attainment of the individuals, there would be differences in level across cohorts, but when we follow a cohort, the age profiles of the cohorts would be close to horizontal lines unless there are changes in the composition of the families. In this respect, compositional effects matter for the university graduates (Figure 4.10).

[25] These analyses are carried out for the other survey years as well and found similar rates.

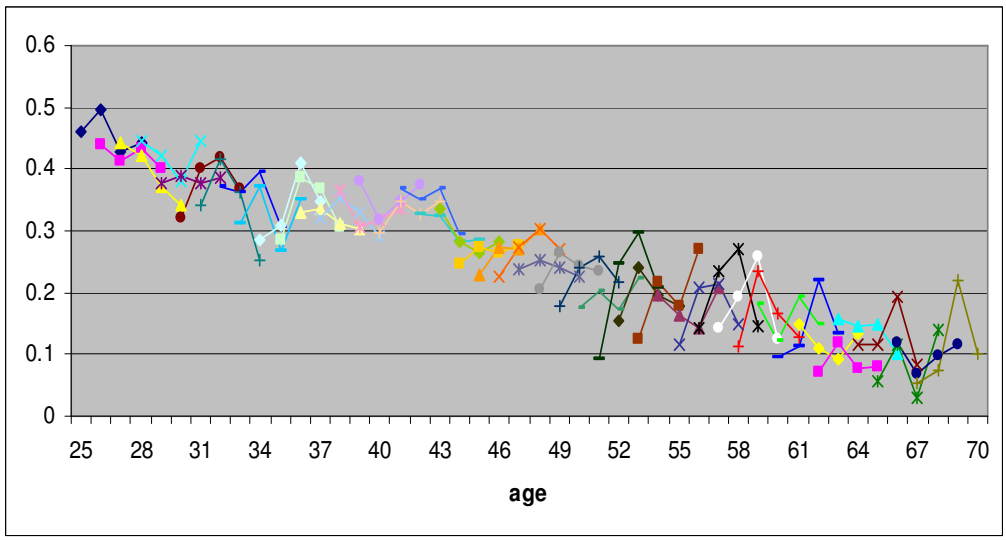

Figure 4.9: Share of Household Heads that are High School Graduates

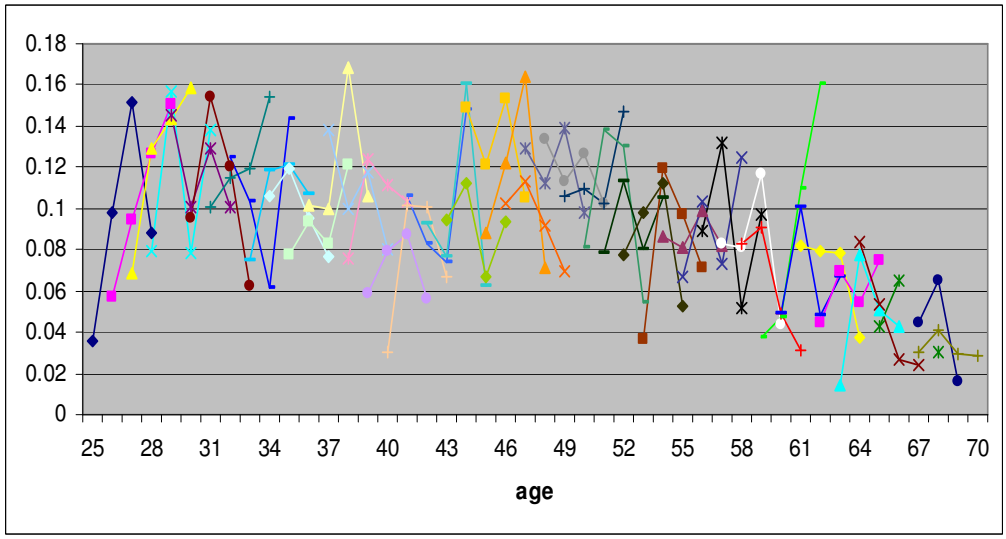

Figure 4.10: Share of Household Heads that are University Graduates

The shares of high school graduates among household heads are decreasing when we move from younger cohorts to older cohorts as expected. The graph is visibly less steep for the older cohorts and even flat for the cohorts above sixties. This pattern could be due to the high mortality rates or due to the preference of less educated, poorer, households to live with their children.

There are two noteworthy points emerging from Figure 4.10. The first one is the existence of significant compositional effects, since the age patterns of the cohorts are far from horizontal line[26]. For example, an increasing pattern of an old cohort could be due to high mortality rate of the poor households or their preferring to live with their children. The second thing worth to mention is the unexpected age profile. As in the case of high school graduates, we expect to see a decreasing profile moving from younger ages to older ages. However, until the middle-ages, we observe a relatively flat profile. A possible reason for this shape could be the very low rate of early married university graduates. The observed positive cohort effects in both graphs, that is younger cohorts being more educated should be kept in mind while analyzing income, consumption and savings. Since income is a function of education, we can expect to see positive cohort effects in income, consumption and saving analyses as well.

4.2.3 Household Size

The consumption of a household is a function of the number of individuals in that household. Therefore, the evolution of family size would affect the shape of the consumption profiles. In this part of the study, family size is plotted against the age of the household head for the whole sample and the three education groups through the Figures 4.11 to 4.14.

According to the figures, the household size profiles present a hump shape with a peak at the beginning of the 40's for the whole sample and the first two education groups. However, the hump is not as pronounced as in the US (Attanasio and Weber, 1995), Norway (Halvorsen 2003) and Iran (Marku, 2004). The reason could be the merging of the families at the two ends of the life-cycle. For the university graduates, the peak occurs at the middle of the 30's. The life-cycle profile of household size for Turkish households is similar to the one for Mexico, and the

[26] It should also be noted, the low cell sizes of the university graduated group could be responsible from within cohort fluctuations.

family size is higher than Thailand and Taiwan (Attanasio and Szekely, 2000). The decline in the household size at the last part of the life-cycle (Figure 4.11) is also observed for Mexico and Taiwan. Moreover, family size decreases with education; for all the ages, least educated group is found with the highest family size.

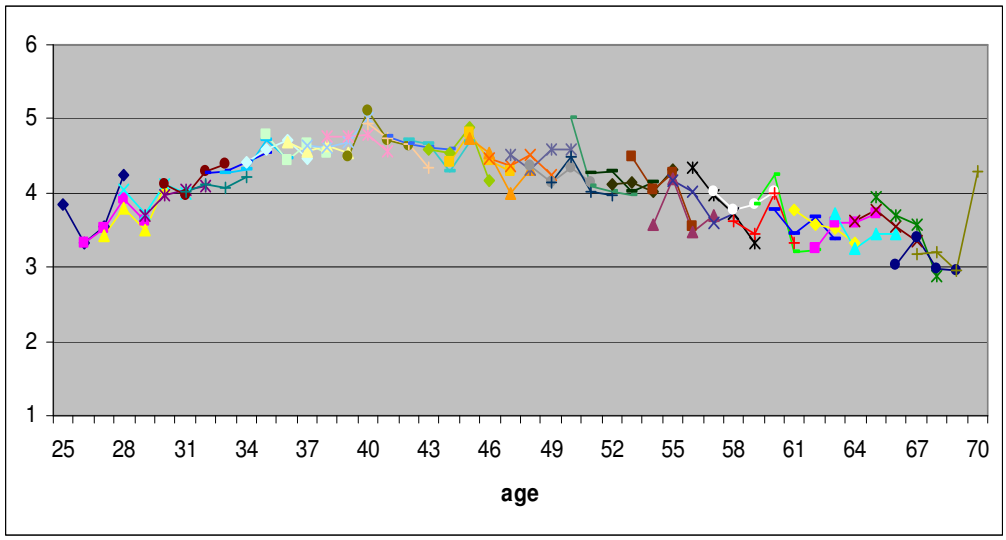

Figure 4.11: Household Size by the Age of the Household Head

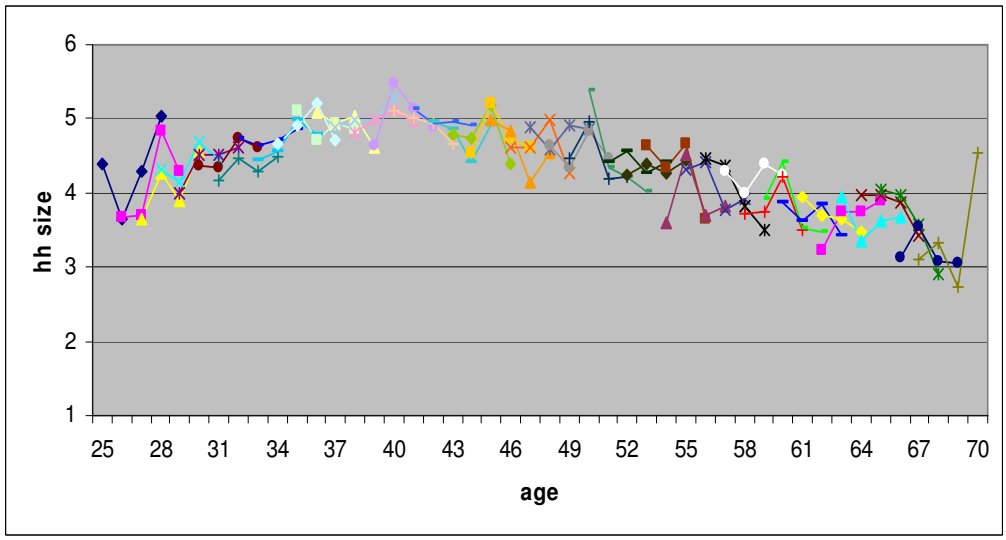

Figure 4.12: Household Size by the Age of the Household Head (Primary School Graduates and below)

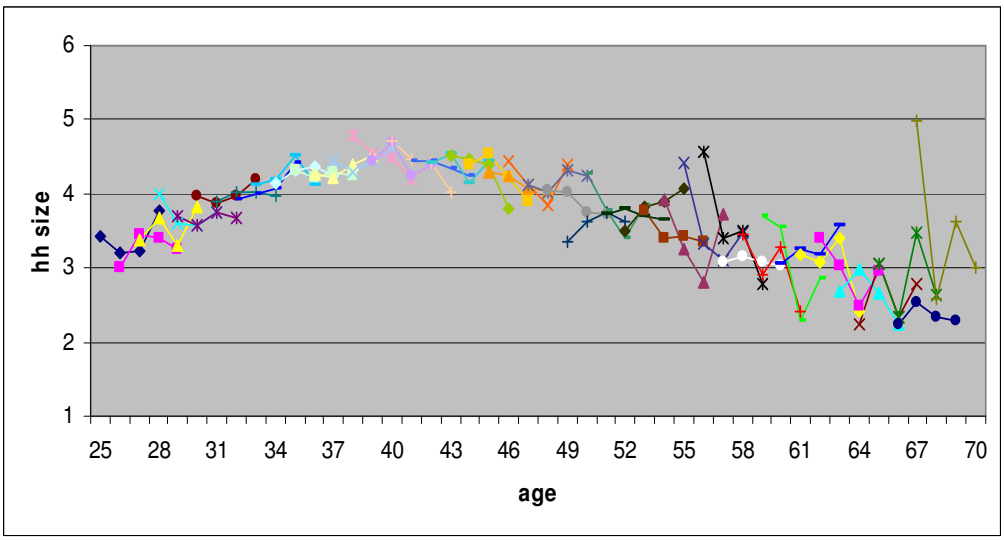

Figure 4.13: Household Size by the Age of the Household Head (High School Graduates)

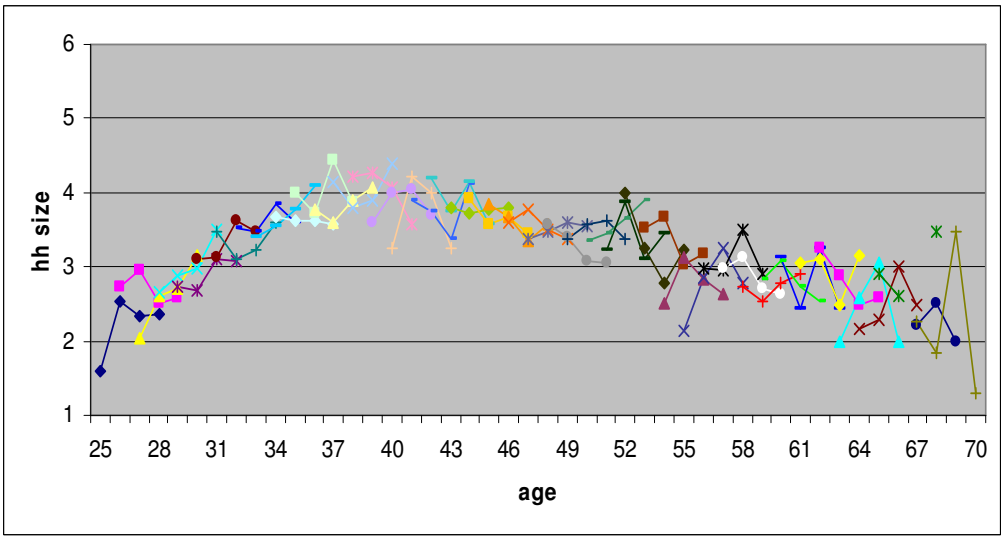

Figure 4.14: Household Size by the Age of the Household Head (University Graduates)

Figure 4.15 presents the number of children below age 15 against the age of the household head[27]. The pattern is similar to the household size, whereas with a more pronounced hump shape. In Turkey, the number of children is smaller than the two Latin America countries, Mexico and Peru and it is close to the Taiwan (Attanasio and Szekely, 2000).

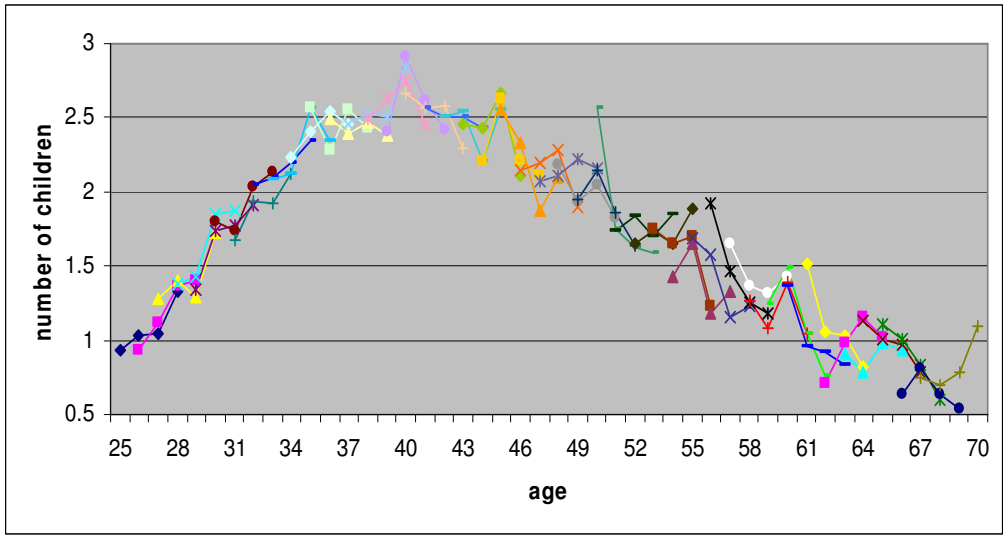

Figure 4.15: Number of Children by the Age of the Household Head

4.3 Cohort Analyses of Income, Consumption and Saving

In this part of the study, income, consumption and savings are investigated by using synthetic panel data techniques. Analyses are based on graphical illustrations, as used above and the regression analyses explained in Section 4.1.

4.3.1 Income Analyses

In this section, the cohort techniques are employed to estimate total household age-income profiles. Figure 4.17 gives the median cohort income against the age of the

[27] In the survey, only the children still living with the parents are captured.

household head. According to the figure, household disposable income has a hump-shaped profile whereas, hump is not significant as found for many developed countries (see, for example, Attanasio, (1994 and Burbidge and Davies, 1994). Median income increases until age 44, stays flat between the ages 44 and 60 and decreases at a low rate thereafter. This relatively flat shape compared to developed countries could arise from the household composition. The preferring of young and old households to live with their parents which is found above could smooth the income profile by preventing significant drop in incomes at the two end of the life-cycle profile. Besides, the negative relationship between the wealth and mortality rates could lead to flatter pattern at the end of the life-cycle[28]. Throughout the study, the term "selection bias" is used to represent the composition of wealthier household heads at old ages due to the preferring of families to live together and negative relationship between mortality and wealth.

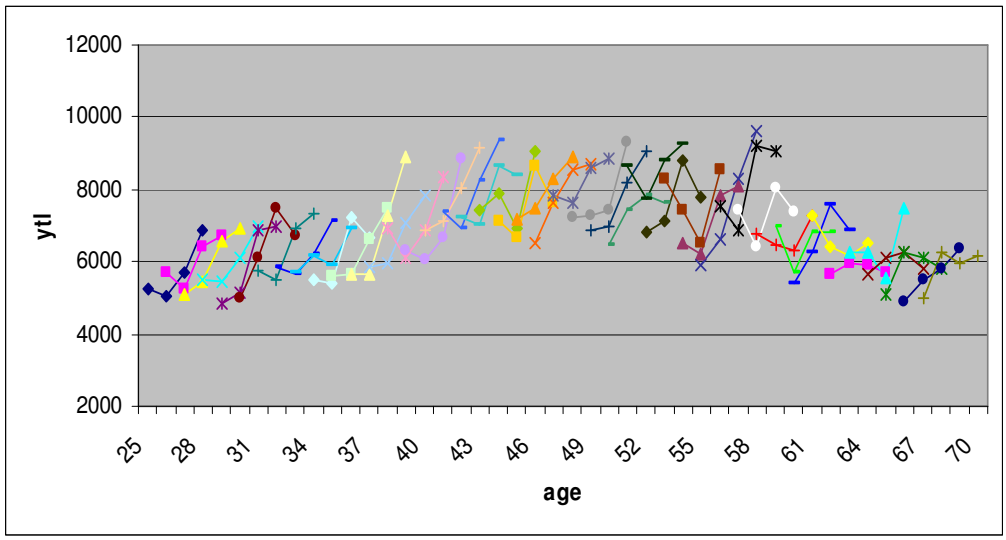

Figure 4.17: Median Income by Cohorts

Moreover, in Figure 4.17 cohort effects are quite evident[29]. For almost all cohorts, age profiles for the younger cohorts lie above the profile for the next older cohort.

[28]Analyzing the components of income, which is given in the further parts of the study, could also shed light to this relatively flat shape.

[29] The vertical distance between the overlapping cohorts could be interpreted as cohort effects.

The younger the cohort, the more lifetime resources it has which could be due to the economic growth. Another point to mention is the growth, experienced by all the cohorts for the last two survey years except the oldest ones[30].

In order to identify age, cohort and time effects, visualized in Figure 4.17, I regress data points plotted in that figure on a set of cohort, age and time dummies constrained to have zero mean and orthogonal to time trend, a procedure which is explained above in more detail. In Figure 4.18, cohort dummies obtained from the regression is plotted.

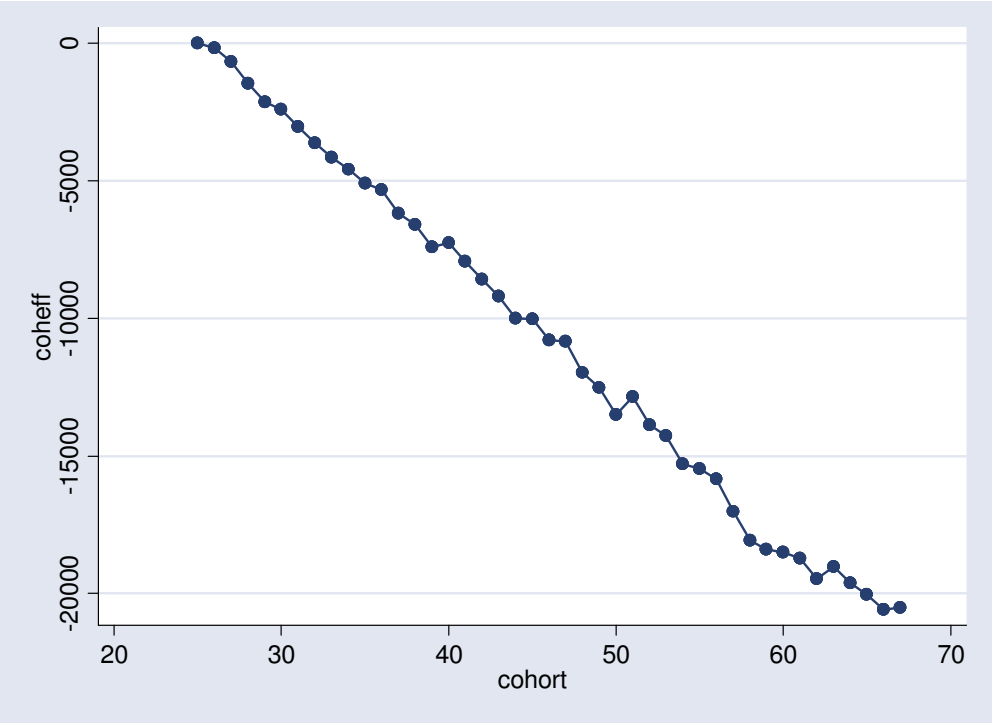

Figure 4.18: Cohort Effects in Income

The horizontal axes in the above graph shows the age of the cohort in 2002. Cohort effects are found to be declining with "age in 2002", so that the younger the household, the higher is its lifetime profile of income. A decreasing profile is also

[30] The period under study, 2002-2004, is the post-crisis period and the Turkish economy experienced a recovery during these years.

found for US, Taiwan (Paxson, 1996) and Iran (Marku, 2004), however the decline in US and Iran was not as strong as the one for Turkey.

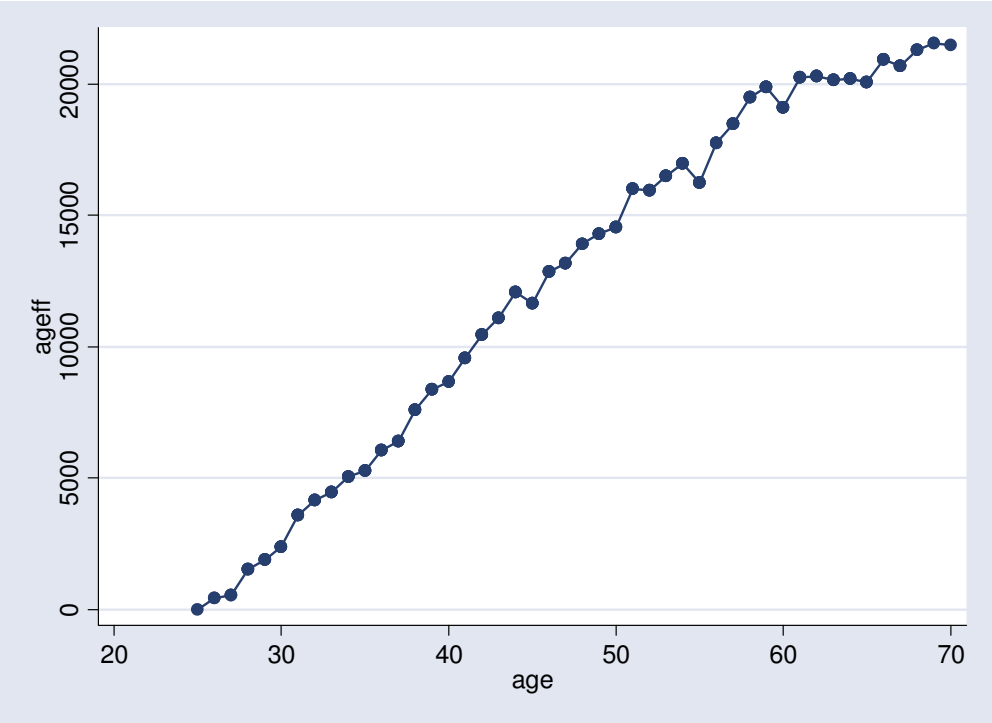

Figure 4.19: Age Effects in Income

In Figure 4.19, the age effects, those are the fitted coefficients from estimation of (3), are plotted against the age of the household age. During the cross-sectional analyses, the age profile of income is found with a hump shape which is significantly different from the above figure. This situation shows us the importance of using cohort data when there are cohort effects. The income is found to be a concave function of age. Even after age 60, there is still a little income increase. If we compare this figure with the Figure 4.17, it could be said that, the observed hump shape in Figure 4.17 comes from the cohort effects, not the age effects. We do not observe a decline in income with age even for the oldest cohorts. Therefore, the pure age profile does not exhibit a decline at old ages. It should be noted that what we are looking at the graph is the total disposable income not the labor income. Hence, older households could have other source of income, such as

pension income and transfer income that prevents a drop in total income. Moreover, the selectivity could also lead to an increasing age profile.

Figure 4.20: Year Effects in Income

Figure 4.20 is plotted by using the coefficients of the time dummies from the estimation of (3) and shows the year effects. The magnitude of these effects is much smaller than cohort and age effects. According to the figure, economy is growing faster than trend for the years 2004 and 2005 which is also observed as the growth of almost all cohorts for those years in Figure 4.17. This kind of a pattern is expected since we experienced very high growth rates in the post crisis year, 2002 (6.16%) and in 2004 and 2005 (9.36% and 8.4% respectively).

In Figures 4.21 to 4.23, median income for three education groups are plotted against the age of the household head. The disaggregation of the population could

help us to observe the differences in profiles for different education groups[31]. Income is found to be increasing with education as expected. As for the whole sample, income profiles exhibit hump-shapes for the first two education groups; however, the hump seems more significant for high school graduates. According to Figures 4.6 and 4.7, the number of nuclear families is higher especially for young and old cohorts for the least educated group due to their preferring to live with their older or younger parents. This situation can be a reason of relatively slight hump profile of income for this group by preventing the significant drops at the two ends of the life-cycle[32].

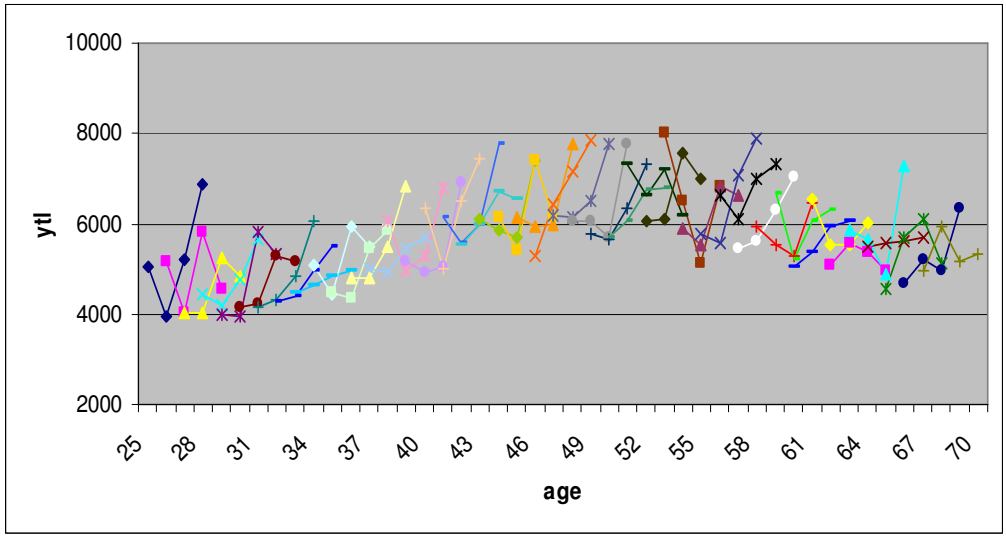

Figure 4.21: Median Income by Cohorts (Primary School Graduates and below)

[31] Dividing the sample into education groups might help us to control for the selection bias as well.

[32] Moreover, household size profile of the least educated group has a slighter hump shape relative to high school graduates.

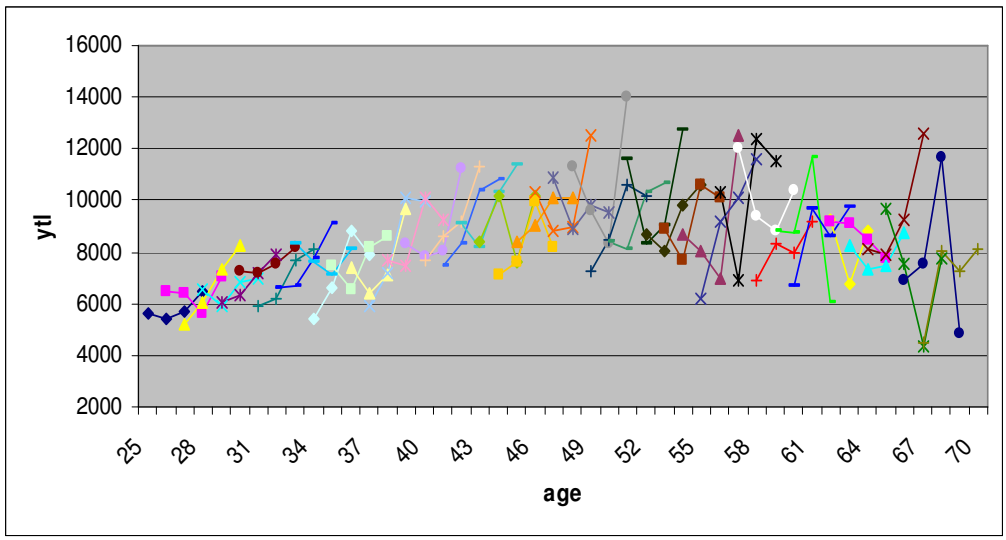

Figure 4.22: Median Income by Cohorts (High School Graduates)

For the most educated group, income profile is found to be steeper for some country studies (For example, Attanasio, 1994 for US; Attanasio and Szekely, 2000 for Mexico, Peru, Thailand and Taiwan). But what we observe from the Turkish data is a somewhat increasing profile with age. A possible explanation for this case could be the interaction of small cell sizes with the negative relationship between mortality and wealth[33].

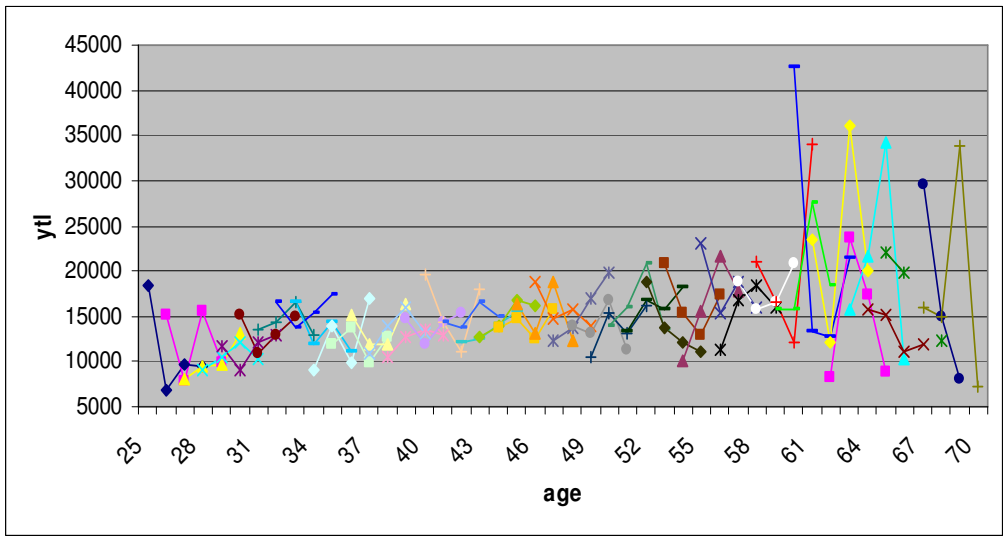

Figure 4.23: Median Income by Cohorts (University Graduates)

[33] Larger variability observed for the older cohorts in Figure 4.23 could reflect the small cell sizes.

4.3.2 Consumption Analyses

This section analyses the total consumption expenditures of the households by using synthetic panel techniques. In Figure 4.24, cohort medians for total consumption against age are plotted. Consumption profile presents features similar to income; a hump shape is also observed for the consumption profile. As in the case of income, cohort effects are again significant. For almost all cohorts, age profiles for the younger cohorts lie above the profile for the next older cohort. The increasing trend of the age profiles for almost all cohorts for the last two survey years emphasizes the growth between these years.

Carroll and Summers (1991), interpreted the similarity between the income and consumption as evidence against the life-cycle theory. However, the effects of household composition and labor supply decision which have life-cycle dynamics as well are ignored in these graphs. It was shown that, size of the household which affects the consumption of households has a similar hump-shape[34]. In this respect, to test the life-cycle model in a more reliable way, I have constructed per adult-equivalent consumption profile by employing the OECD modified scale which assigns a value of 1 to the household head, 0.5 to each additional adult member (individuals older than age 13), and 0.3 to each child (individuals younger than age 14) (Figure 4.25). From this figure it is evident that, this life-cycle profile is much flatter, which could be interpreted in favor of the life-cycle model. Similar evidence is reported by Attanasio (1994) and Villaverde and Krueger (2004) for US, Banks and Blundell (1994) and Attanasio and Browning (1995) for UK and Attanasio and Szekely (2000) for Peru, Mexico and Thailand.

[34] Although the household size profile peaks earlier, still the household size could affect the consumption of the household.

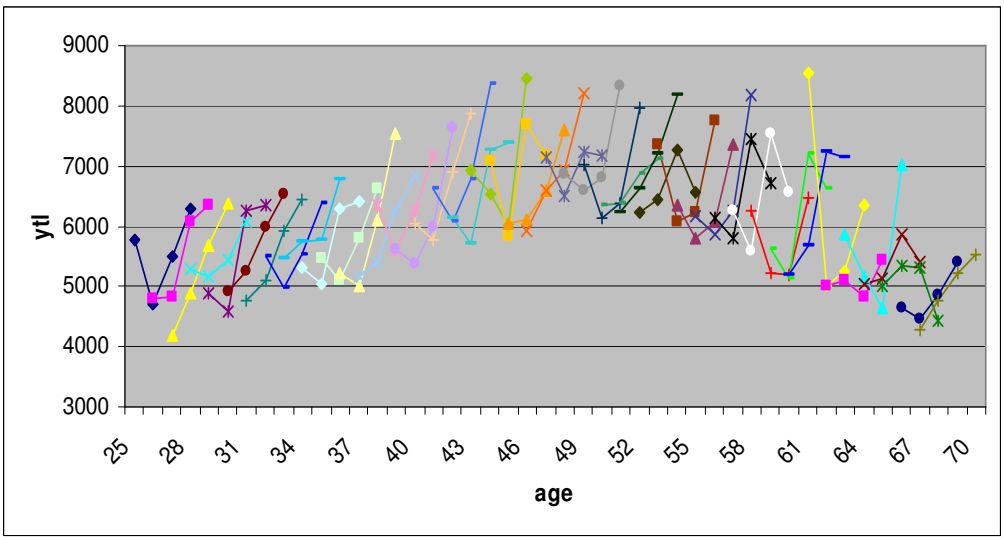

Figure 4.24: Median Consumption by Cohorts

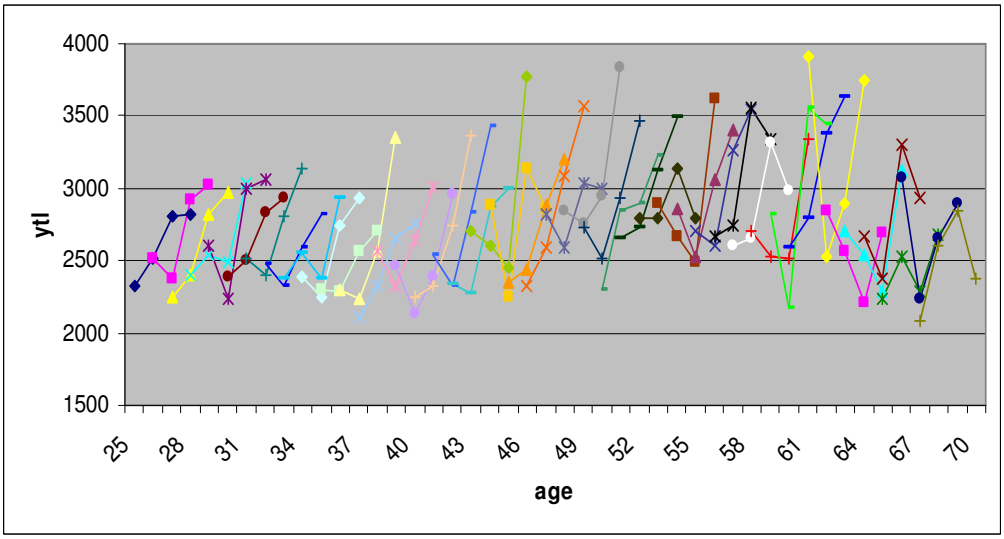

Figure 4.25: Median Adult-Equivalent Consumption by Cohorts

Age and cohort effects observed in Figure 4.24 are quantified, by employing the decomposition techniques explained above. Figure 4.26 shows the cohort effects as a function of cohort age (age of the household head in 2002). Cohort effects in consumption are found to decline steadily with the age in 2002, in other words, the younger the household, the higher is its lifetime real consumption.

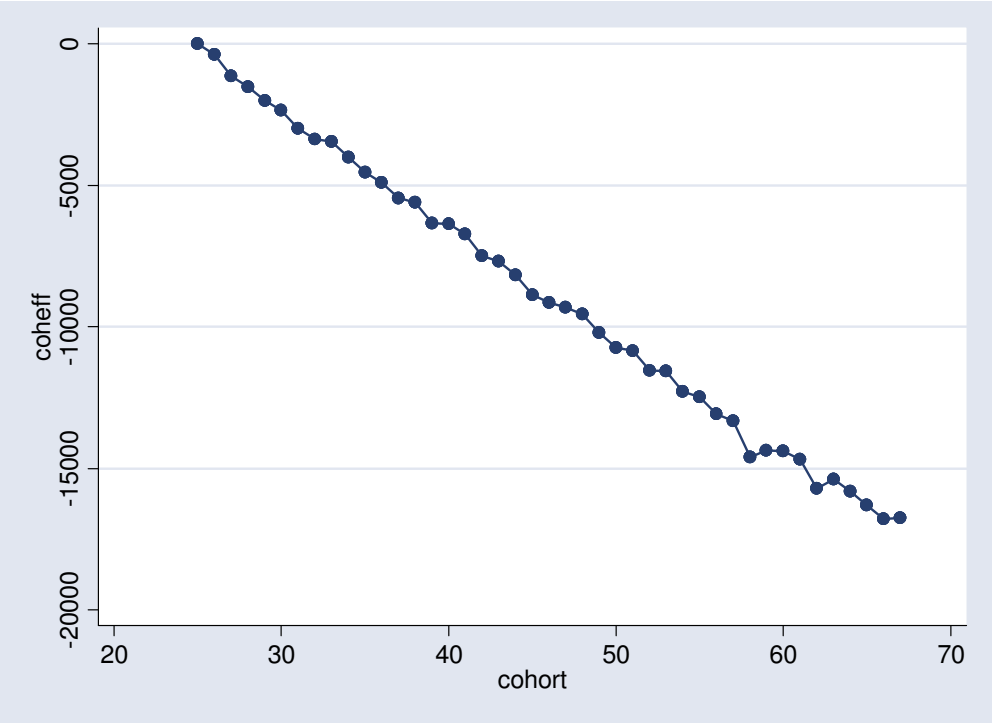

Figure 4.26: Cohort Effects in Median Consumption

Figure 4.27 shows the age effects as a function of the age of the household head. Similar to mentioned in income analyses, the comparison of Figure 4.25 with the cross-sectional age profile of consumption (Figure 3.4) shows how misleading are the results when we are interested in the life-cycle profiles. In contrast to hump-shape of cross-sectional profile, consumption is found to be increasing with age which is evident also from Figure 4.24 with an increasing consumption profile for almost all cohorts. The decline of the consumption after the middle of forties in the cross-section age profile is due to the fact that, at a given date, older people have lower consumption. Consumption does not decline with age for almost any cohort, however the growth rate of consumption for the older cohorts are lower which makes the age profile somewhat concave. This lower consumption is attributed to lower lifetime wealth of the older cohorts according to the life-cycle theory. A similar age effect profile is found for Taiwan (Paxson, 1996) and Iran (Marku, 2004) as well. When we look at the profiles of developed countries such as US and UK, we see that they are hump shaped (Paxson, 1996).

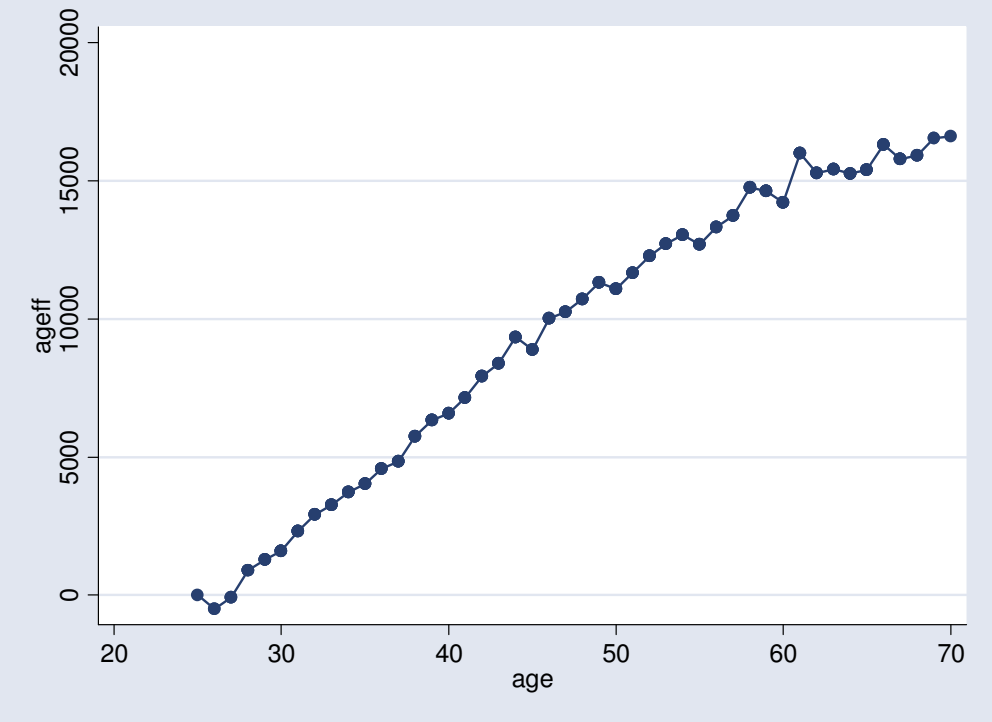

Figure 4.27: Age Effects in Median Consumption

An increasing age profile for consumption could appear due to some facts. Increasing income profile by age found in Figure 4.19 could lead to an increasing consumption profile. Moreover, the high real interest rate observed in Turkey could make the households to postpone their consumptions until late in life. The flatter pattern observed after age 60 could be due to the lower consumption needs after the retirement and the flatter household size after that age (Figure 4.11).

Figure 4.28 shows the year effects as a function of the year. The magnitude of these effects is again much smaller than cohort and age effects. The growth observed in the last two surveys years for most of the cohorts at Figure 4.24 is also evident from Figure 4.28. The very high growth rates in 2002, 2004 and 2005 in income can lead to that kind of year effect pattern in consumption due to the close relationship between income and consumption.

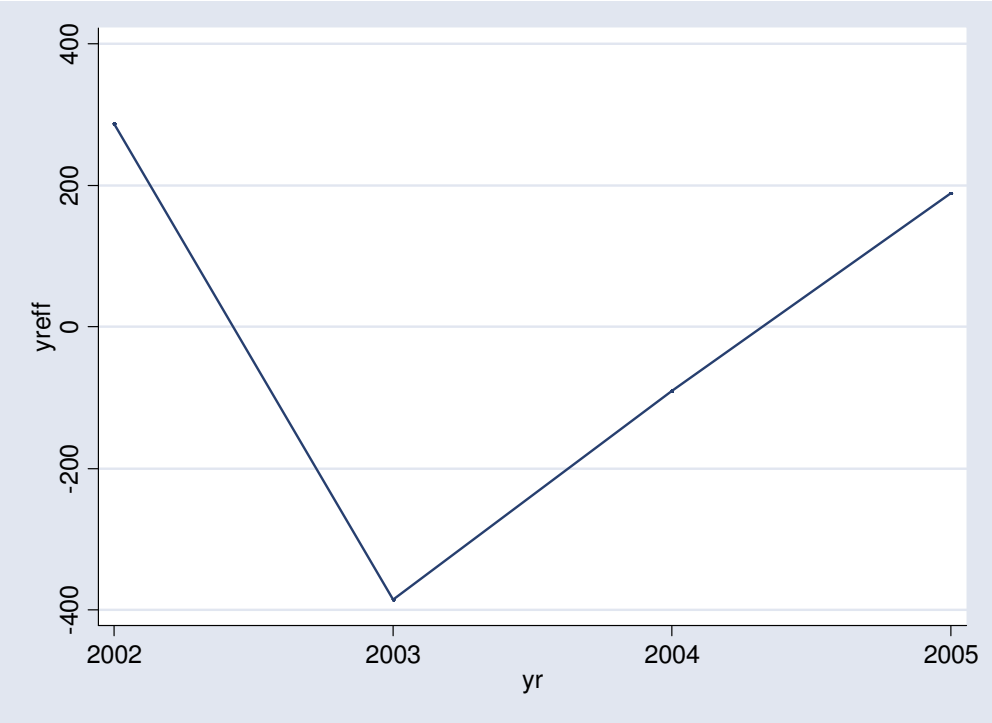

Figure 4.28: Year Effects in Median Consumption

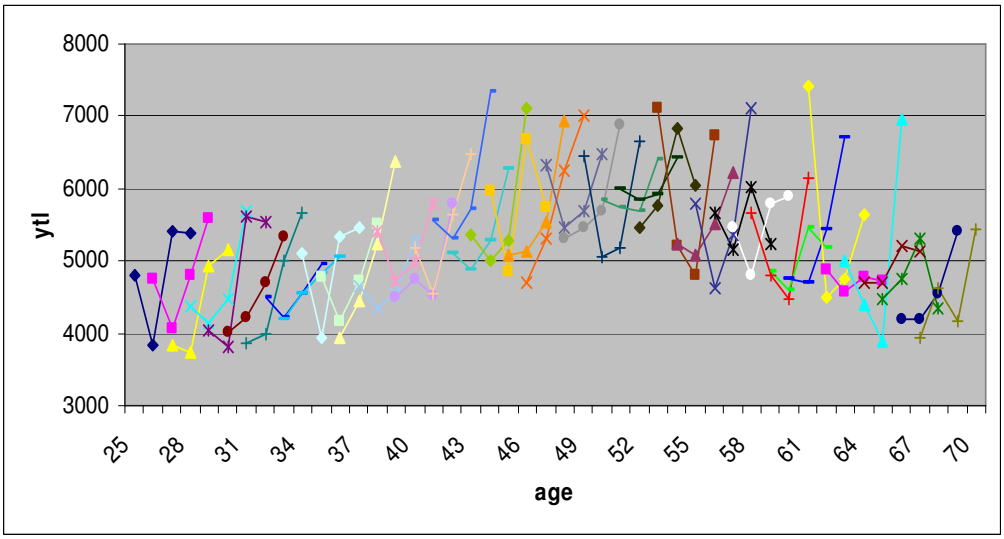

Figure 4.29: Median Consumption by Cohorts (Primary School Graduates and below)

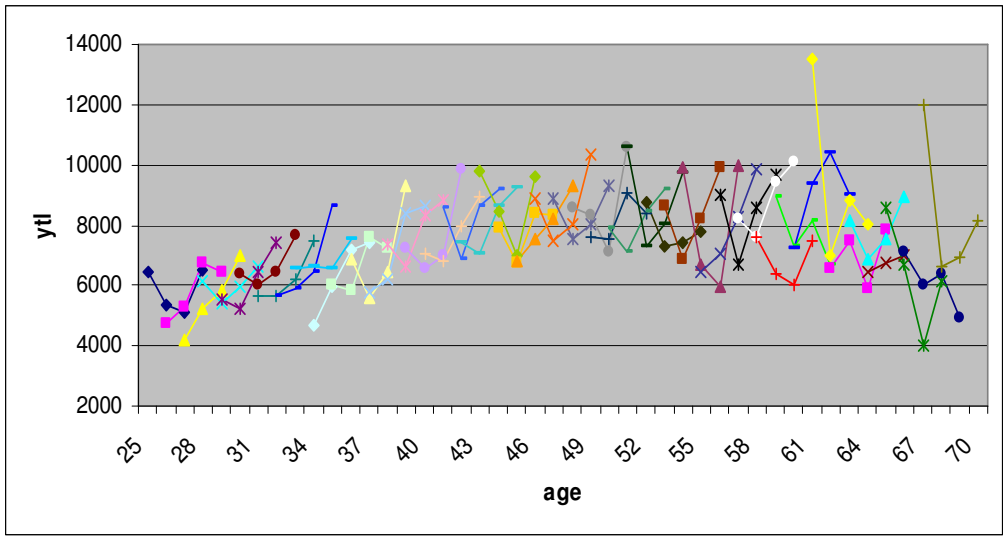

Figure 4.30: Median Consumption by Cohorts (High School Graduates)

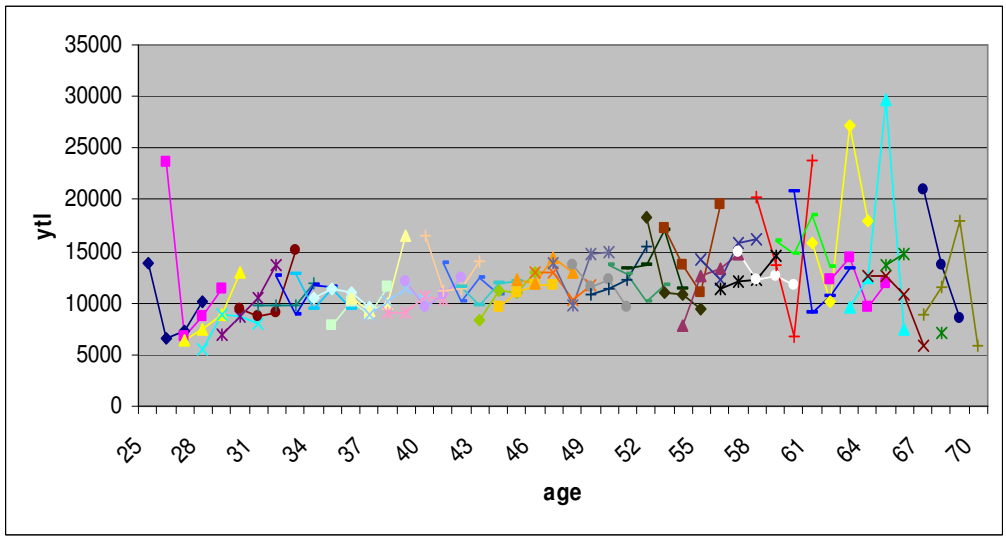

Figure 4.31: Median Consumption by Cohorts (University Graduates)

In addition to age and cohort effects, some other factors could affect consumption of the households. For example, according to permanent income model, consumption is a function of permanent income. Moreover, consumption measures directly the resources available to households and therefore is a better indicator of inequality. In this respect, the consumption profiles are plotted for different

education groups, which is a good indicator of permanent income through the figures 4.29 to 4.31. Consumption is found to be increasing with education as expected. In addition, the shape of the income profiles across education groups are mirrored in consumption profiles. While for the first two education groups, hump shapes are observed in the profiles, the profile for university graduates slightly increases over the life-cycle except for the last few cohorts, as in income profiles.

4.3.3 Savings

The aim of this subsection is to characterize the saving behavior of Turkish households. The cell medians against the age of the household head are plotted in Figure 4.32. Noisiness in the data is evident from the figure. Saving seems to increase in the first part of the life-cycle, peaks around the middle fifties and stays relatively flat thereafter. It is positive for almost all young household heads and all old household heads, which is inconsistent with the life-cycle hypothesis. The literature can explain the positive savings of the young household with liquidity constraints and precautionary savings motive, and the old households with health risk, lifetime uncertainty and bequest motive. However, as mentioned above, a more reliable test of the life-cycle model should consider the family composition and labor supply decision.

Cohort effects are observable for the second part of the life-cycle; at a give date, for the older ages, the savings of the older are less. Moreover, age profile of especially the older cohorts displays an increasing trend which could lead to an increasing pure age profile. In order to identify these effects, decomposition techniques are employed.

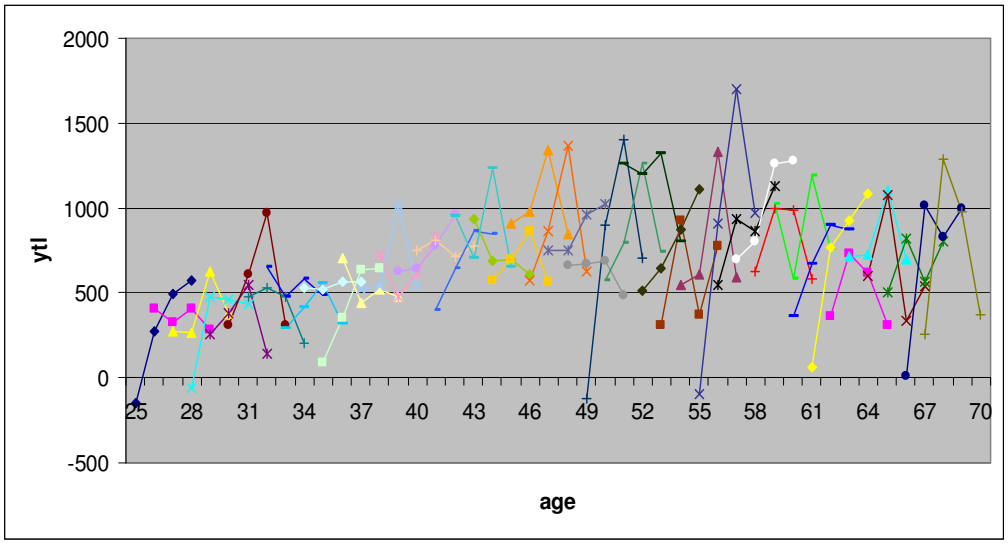

Figure 4.32: Median Saving by Cohorts

Figure 4.33 presents the cohort effects against the cohort age. For the cohorts that are born before 1952 (the age of the cohort are older than 50), younger cohorts save more which is also visually evident from Figure 4.32.

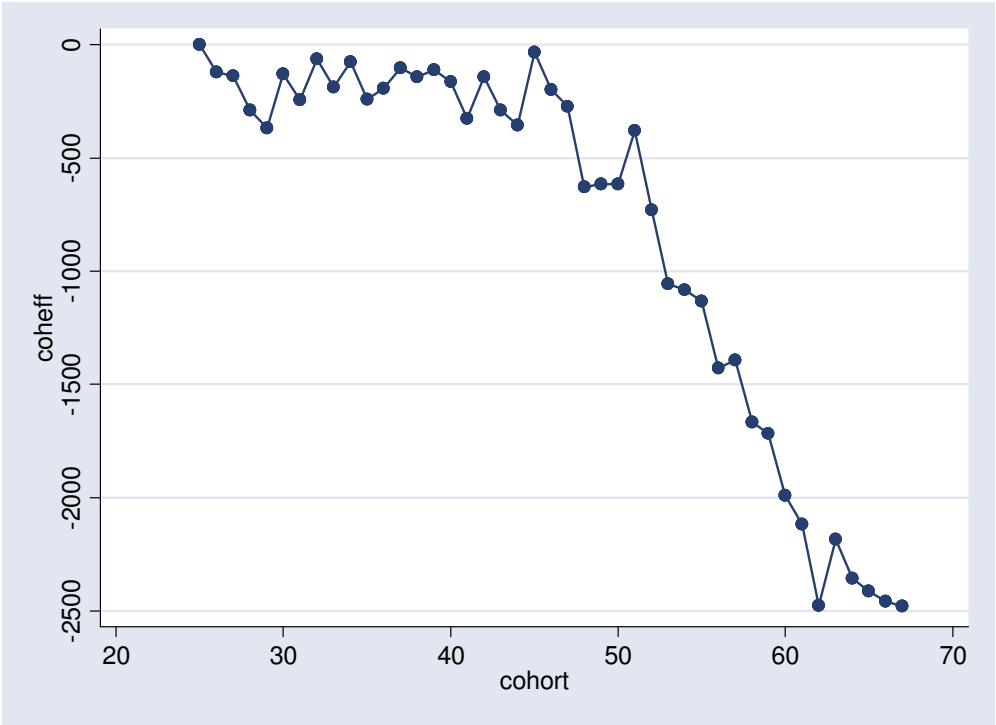

Figure 4.33: Cohort Effects in Median Saving

An increasing age profile in saving is found in contrast to the hump cross-sectional profile (Figure 4.34). Considering cohort and age effects, it could be concluded that, the decline in the saving for the old ages in both cross-sectional profile (Figure 3.7) and cohort profile (Figure 4.32) is due to the cohort effect not the age effect. The comparison of age effect in income (Figure 4.19) and consumption (Figure 4.27) could help us to understand Figure 4.34. For the early ages the age effect is steeper in income than consumption, this steepness increases at old ages which makes the saving profile to increase sharply.

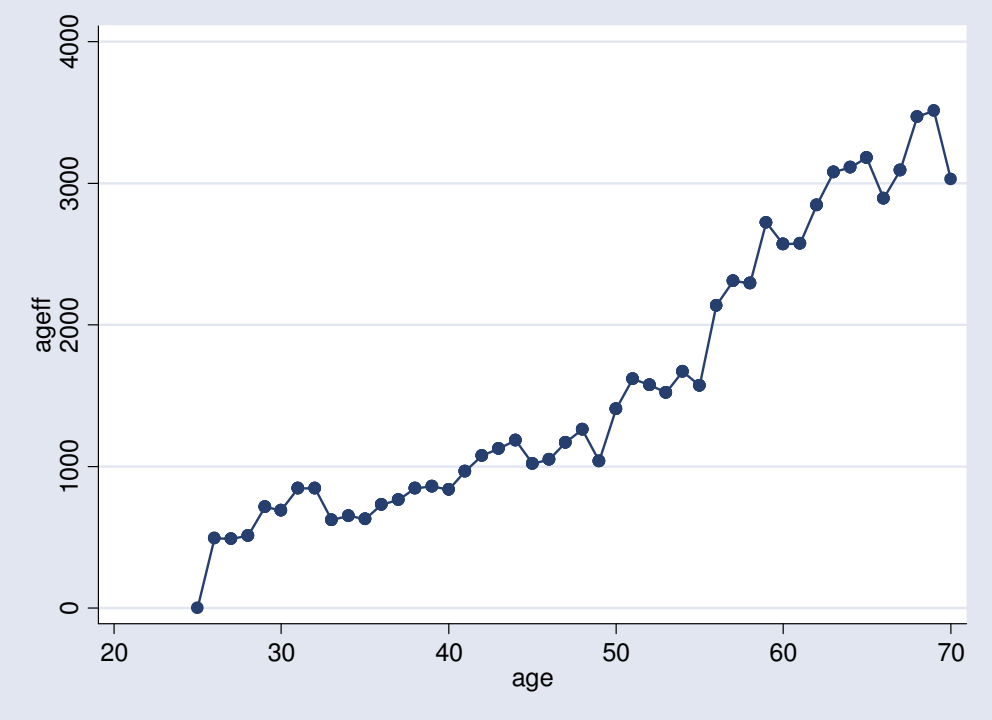

Figure 4.34: Age Effects in Median Saving

The year effects are plotted in Figure 4.35. The comparison of the year effect graphs of income (Figure 4.20) and consumption (Figure 4.28) gives clue about the shape of the year effect graph of saving. Since the growth in income is higher than consumption from 2003 to 2004 and less than consumption from 2004 to 2005, savings increases from 2002 to 2003 and declines from 2004 to 2005. This is also

evident from the Figure 4.32. When we consider the aggregate data, the high growth rate in consumption in 2005 can be the reason of the decrease in 2005.

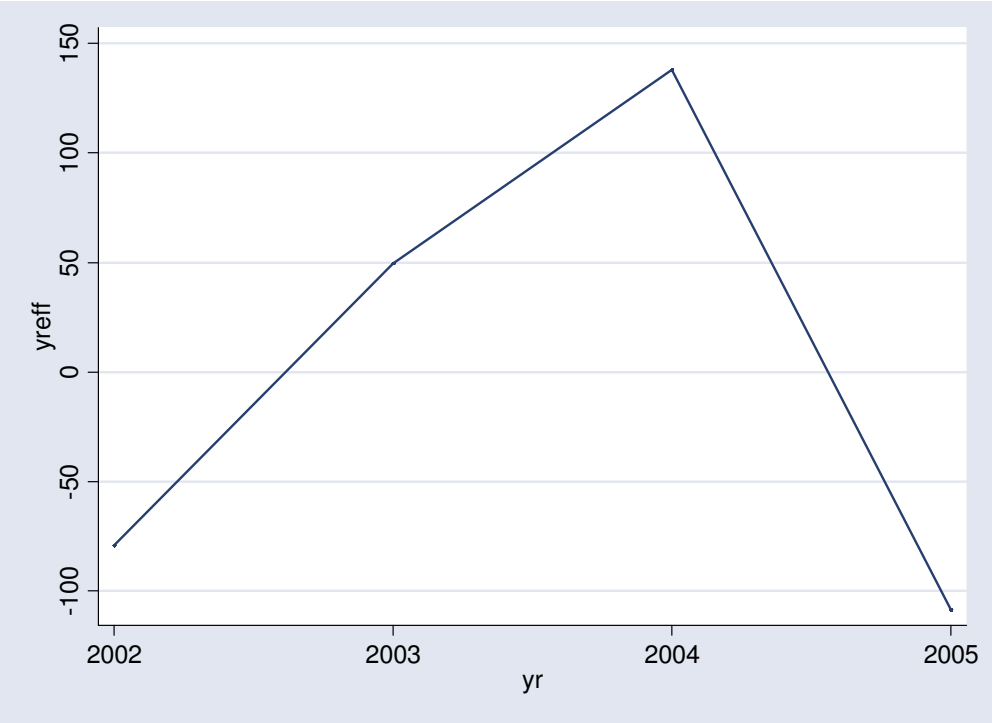

Figure 4.35: Year Effects in Median Saving

The saving behavior of different part of the population could be different. In order to observe the effect of distribution of income on savings, the population is divided into three education groups which reflect the permanent income. By doing so, I prevent the effect of transitory income shocks on savings. Figures 4.36 to 4.38 give the profile of savings by age and by cohorts for three different education groups. The cost of those analyses is the decrease in the cell size.

According to the figures below, saving increases with education (permanent income). The profiles for the first two education groups are very similar to the profile for whole population shown in Figure 4.32. However, the profile for university graduates exhibits a very flat pattern. The findings of smooth income and consumption profiles for the same group explain the smooth profile for saving.

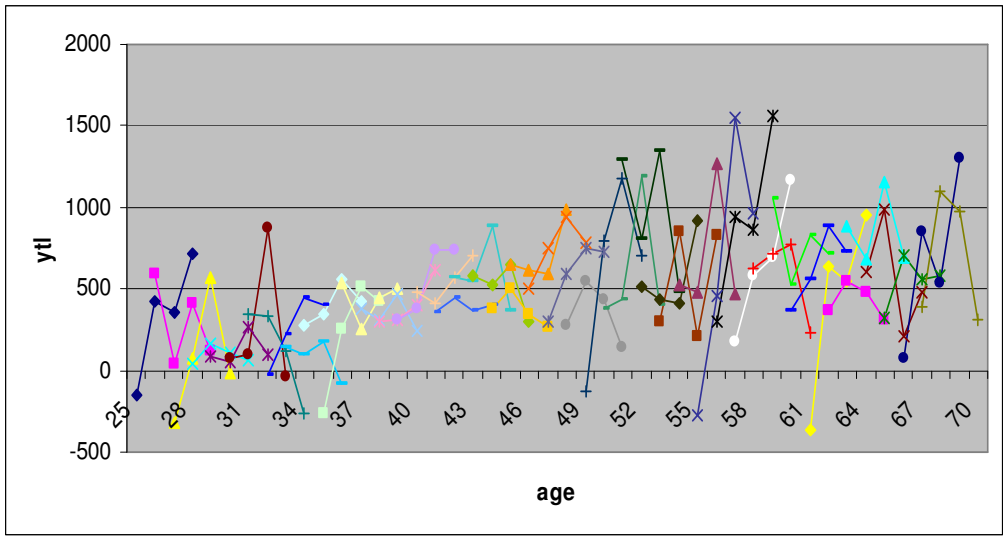

Figure 4.36: Median Saving by Cohorts (Primary School Graduates and below)

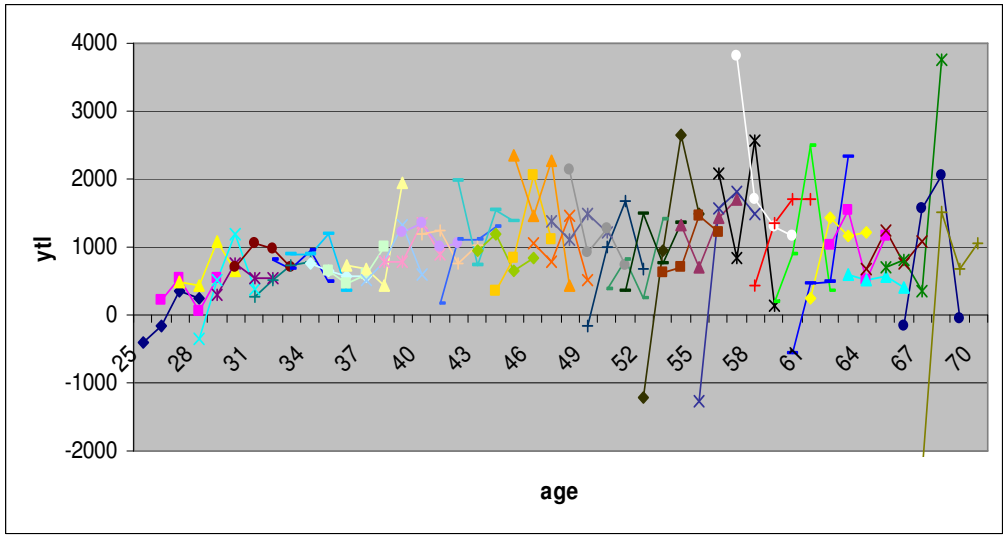

Figure 4.37: Median Saving by Cohorts (High School Graduates)

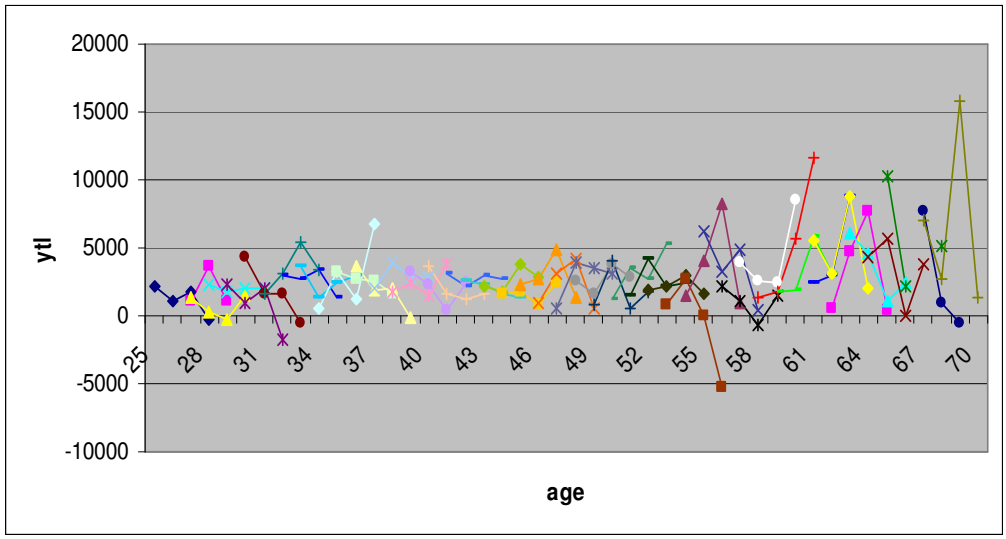

Figure 4.38: Median Saving by Cohorts (University Graduates)

4.3.4 Saving Rate

Following saving, I investigate the saving rate. I begin my analyses by plotting the median saving rate of the cohorts against the age of the household head (Figure 4.39). As mentioned before, I construct the saving rate data by calculating the median of the household saving rates within each cell. According to the figure, a slightly increasing profile is found for the saving rate[35]. This finding is inconsistent with the life-cycle model, according to which saving rate should decline with retirement, and even it should be negative. This increasing pattern could be attributed to the health risk, lifetime uncertainty, bequest motive and selection bias.

[35] While the profile for Norway is an increasing one (Halvorsen, 2003) similar to Turkey, the profiles for US (Attanasio, 1998) and New Zealand (Gibson and Scobie, 2001) exhibit hump shapes.

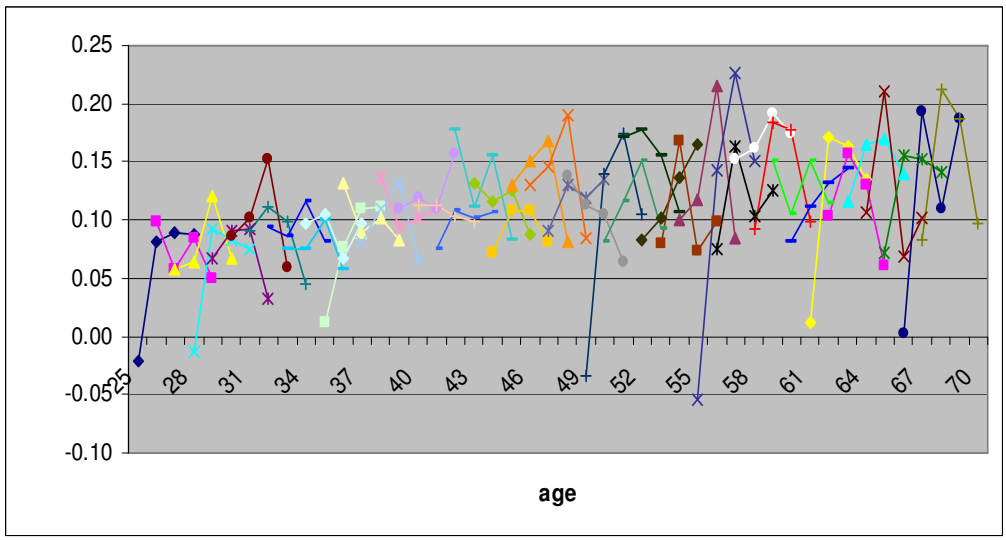

Figure 4.39: Median Saving Rates by Cohorts

In what follows, I decompose age, cohort and year effects. We observe both positive and negative cohort effects (Figure 4.40). While for the older cohorts, the less old ones save more, for the younger cohorts, older ones save more. The highest saving rate is obtained by the cohort whose head is at age 46 in 2002.

Figure 4.41 shows the age effects as a function of the age of the household head. While in the first part of the life-cycle a flat age profile is observed, an increasing age profile is found for the last part of the life-cycle. A similar shape of is found for Taiwan as well (Paxson, 1996). It was found that the household size is low at old ages (Figure 4.11) due to lower number of children (Figure 4.15). On the other hand, it was also found that the number of nuclear families is high at these ages. This situation reflects the fact that, at old ages the share of income earners are high, in other words, the dependency ratio is low. This low ratio leads to high household savings at old ages as observed in Figure 4.41. The existence of bequest motive, health risk or lifetime uncertainty could also be other reasons as well

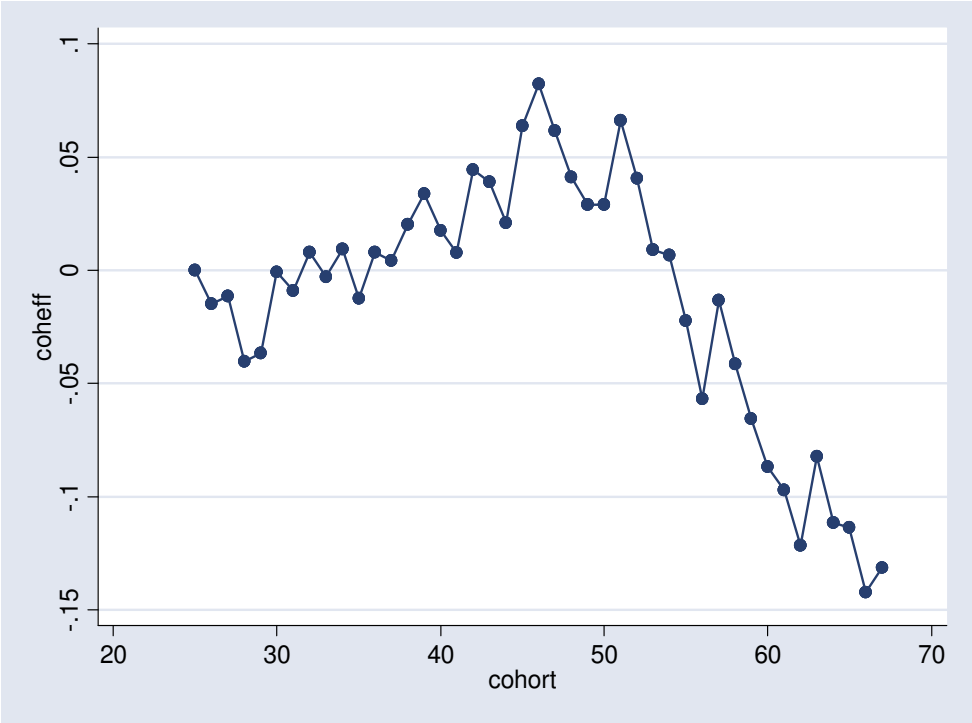

Figure 4.40: Cohort Effects in Median Saving Rate

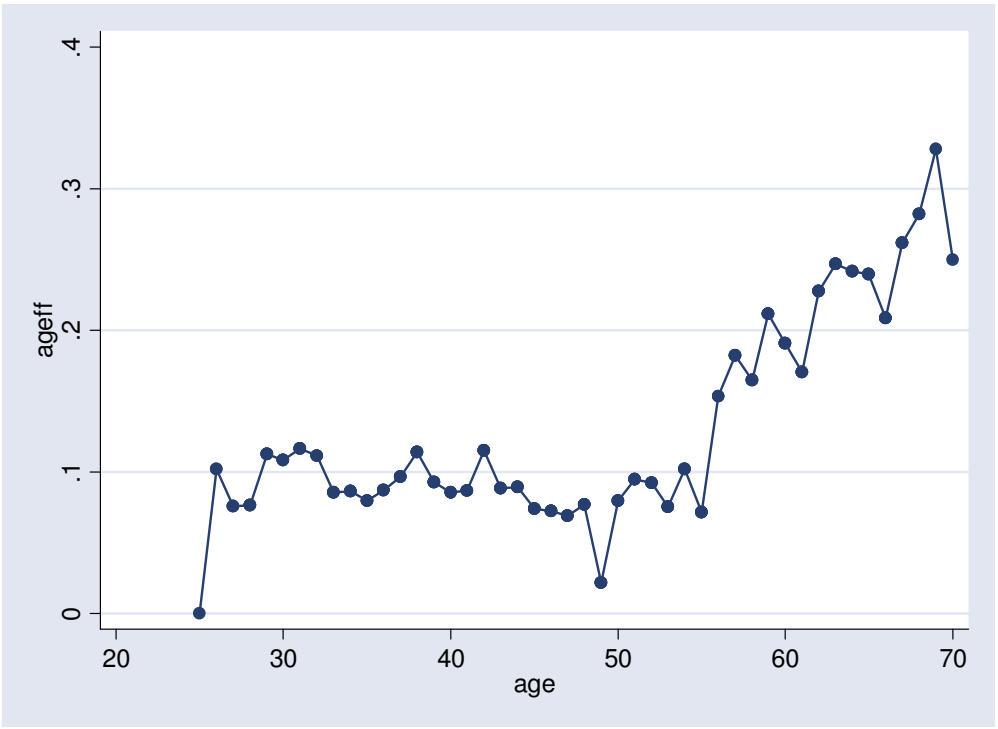

Figure 4.41: Age Effects in Median Saving Rate

The year effects are plotted in Figure 4.42 and according to the figure, the decline in saving rate in year 2005 mentioned in the cross-sectional analyses is also found in the cohort data. When we consider the aggregate data, the higher growth rate in consumption relative to income in 2005 can be the reason of the decrease in 2005.

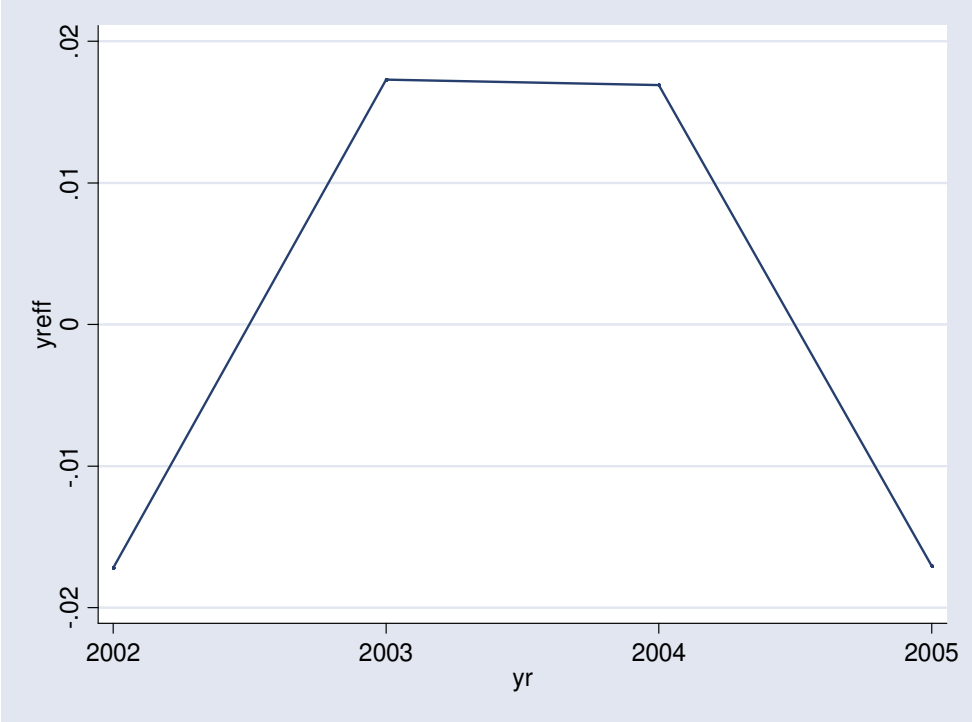

Figure 4.42: Year Effects in Median Saving Rate

In order to see the effect of permanent income on saving rate, I plot the median saving rates for three education groups (Figures 4.43 to 4.45). According to the figures, better educated households do the most of saving in Turkey and saving rate increases with the permanent income. The similarity between the profile for the whole population and the profile for the least educated could be due to the highest share of that group for all the ages. Similar to the income and consumption, increase in education flatten outs the profile.

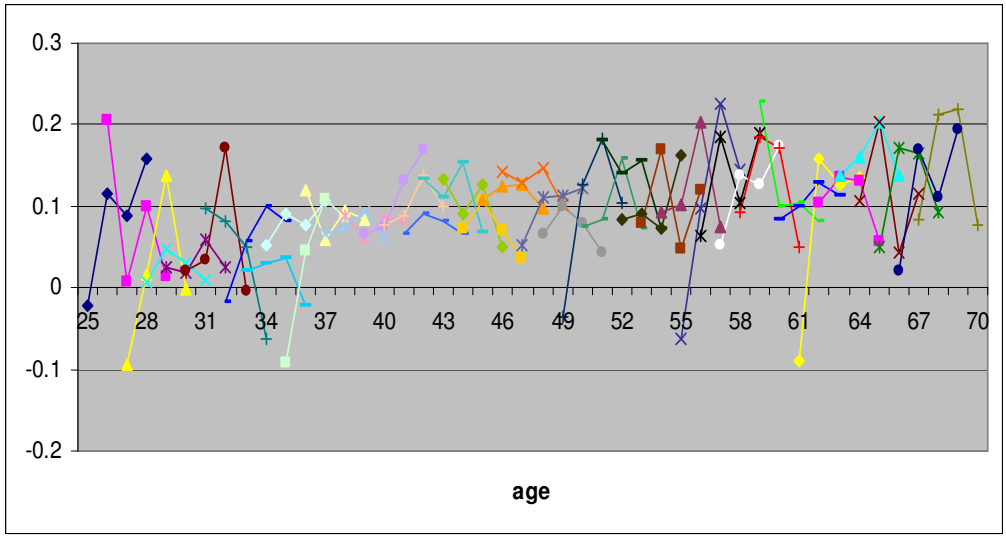

Figure 4.43: Median Saving Rate by Cohorts (Primary School Graduates and below)

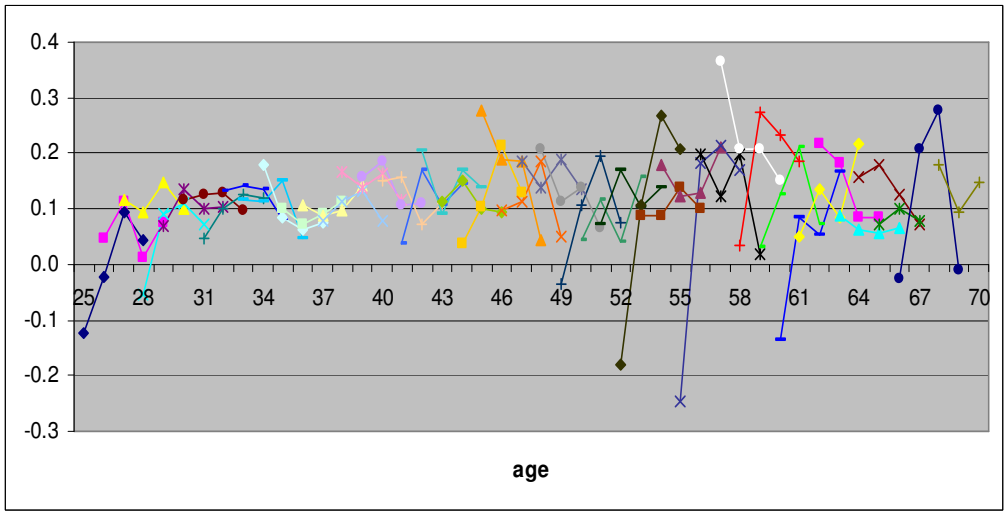

Figure 4.44: Median Saving Rate by Cohorts (High School Graduates)

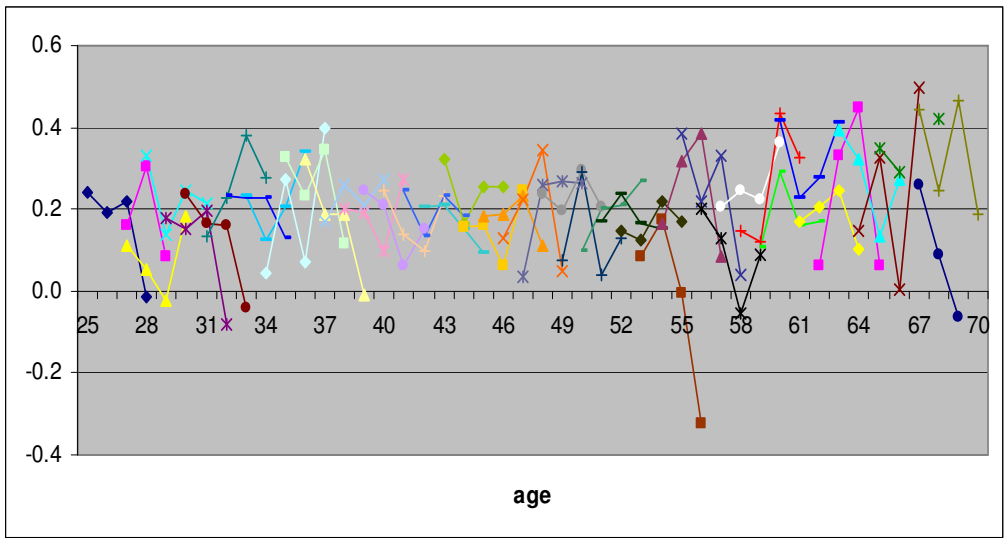

Figure 4.45: Median Saving Rate by Cohorts (University Graduates)

4.3.5 Saving Rate with Durable, Health and Education Expenditures

Expenditures on the durables, education and health could also be considered as saving. In this respect I exclude these items from consumption expenditures and obtain a wider definition for saving. This section investigates the saving rate by using this definition of the saving. As usual, I first graph the median saving rates of each cohort against the age of the household head. For wider definition of saving rate, a slightly increasing profile is found (Figure 4.46). Different from the previous definition, strong cohort effects are evident from the figure. Cohort, age and year effects are quantified through the Figures 4.47 to 4.49.

The visual evidence of positive cohort effects from Figure 4.46 is verified according to Figure 4.47. The youngest cohorts seem to have much higher saving rates than the older cohorts. This is consistent with the pattern of cohort effects that are found for income and consumption. The analyses of durable consumption which will be carried out in the further part of the study could shed light to the difference between the cohort effects of the two saving rate definition.

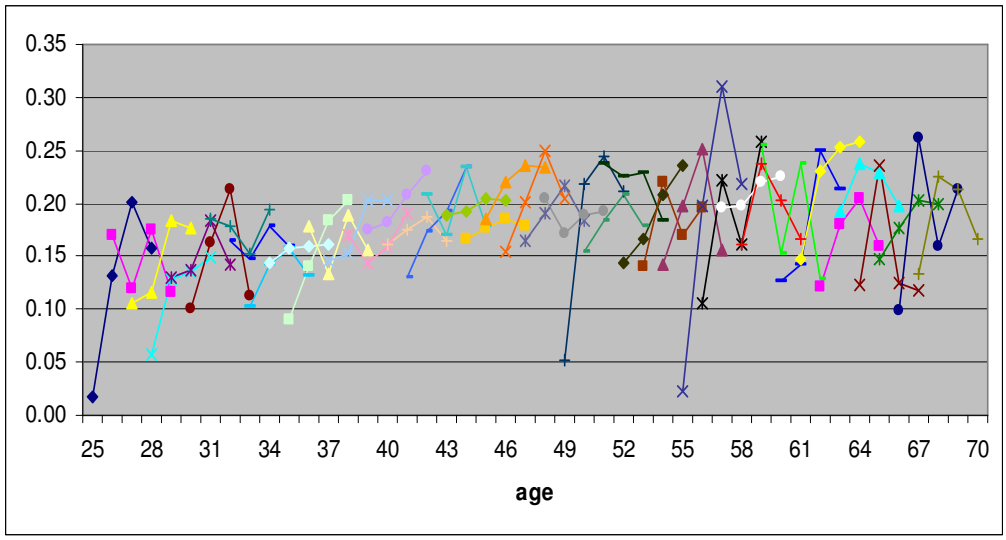

Figure 4.46: Median Saving Rates by Cohorts

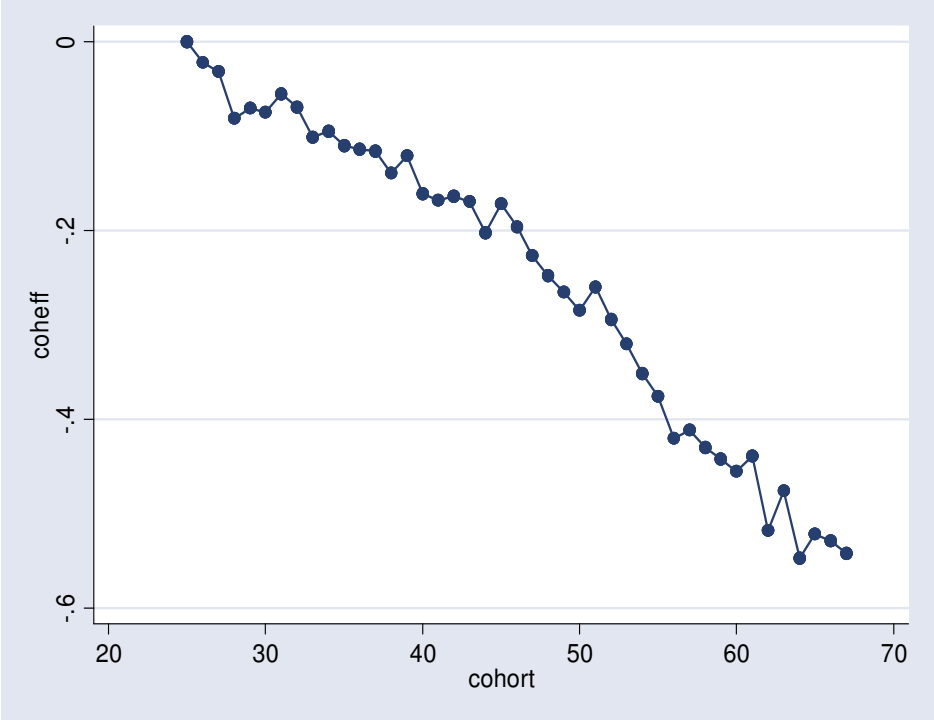

Figure 4.47: Cohort Effects in Median Saving Rate

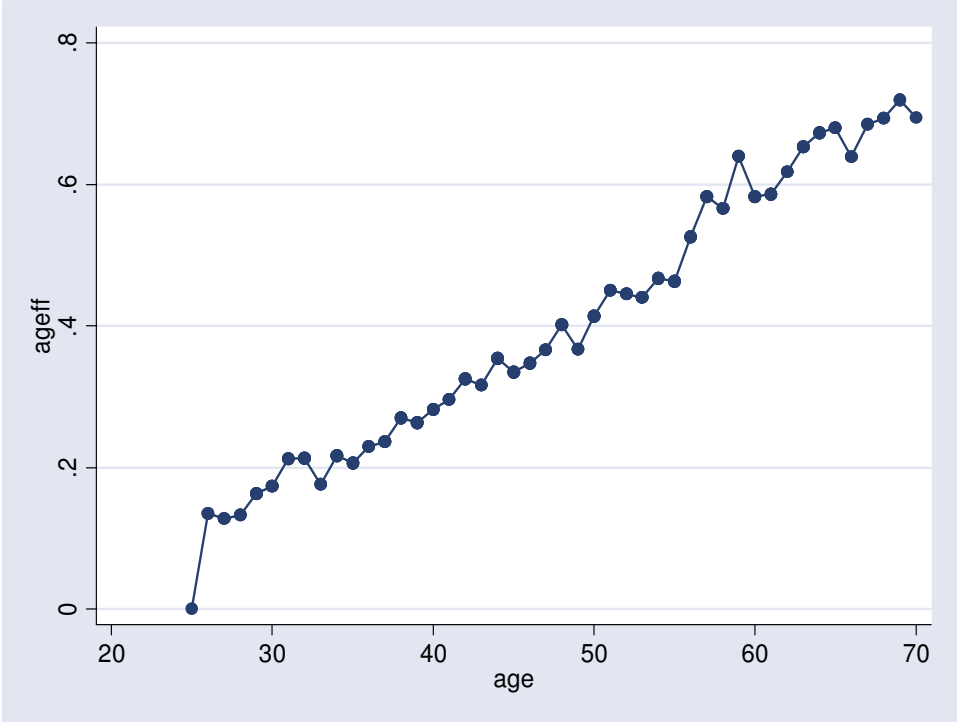

Figure 4.48: Age Effects in Median Saving Rate

Figure 4.49: Year Effects in Median Saving Rate

The pattern of the age effects also changes a lot with this new saving rate. While the increase in saving rate for the last part of the life-cycle is still evident, the flat profile for the first part of the life-cycle now increases with age which is due to the higher purchases of durables by the young households. In terms of the year effects, saving rate is found to be increasing more than trend between 2002 and 2004. The decline in the saving rate for the last survey year observed in Figure 4.46 is also evident from the Figure 4.49.

4.3.6 Saving Consumption Ratio

Analyses are also carried out for the saving to consumption ratio. Since consumption reflects variations to permanent income, and therefore it is less affected by transitory shocks than is current income, it could be a more appropriate denominator. All the analyses regarding this variable give almost identical results as the saving rate as could be seen from the below figures. In this respect, it does not deserve further comment.

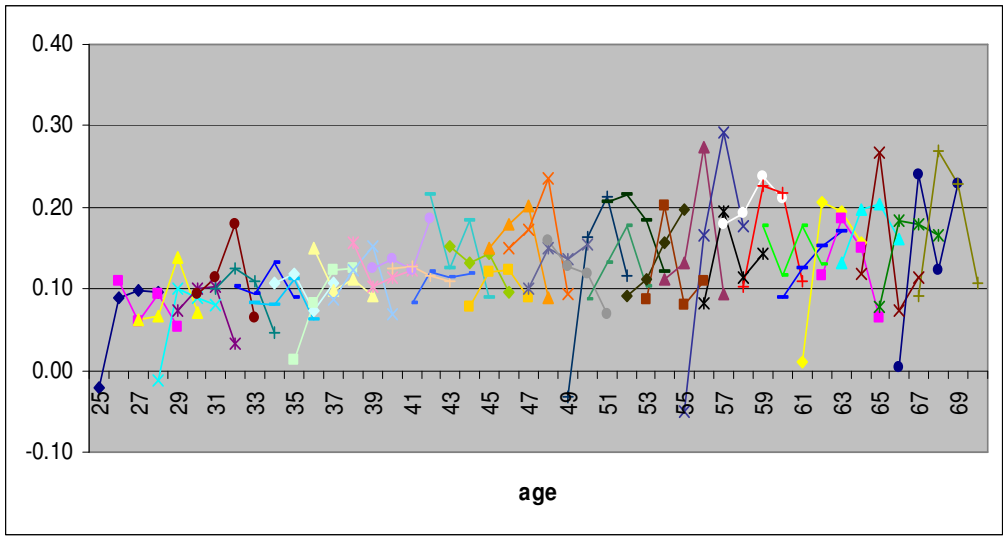

Figure 4.50: Median Saving Consumption Ratio by Cohorts

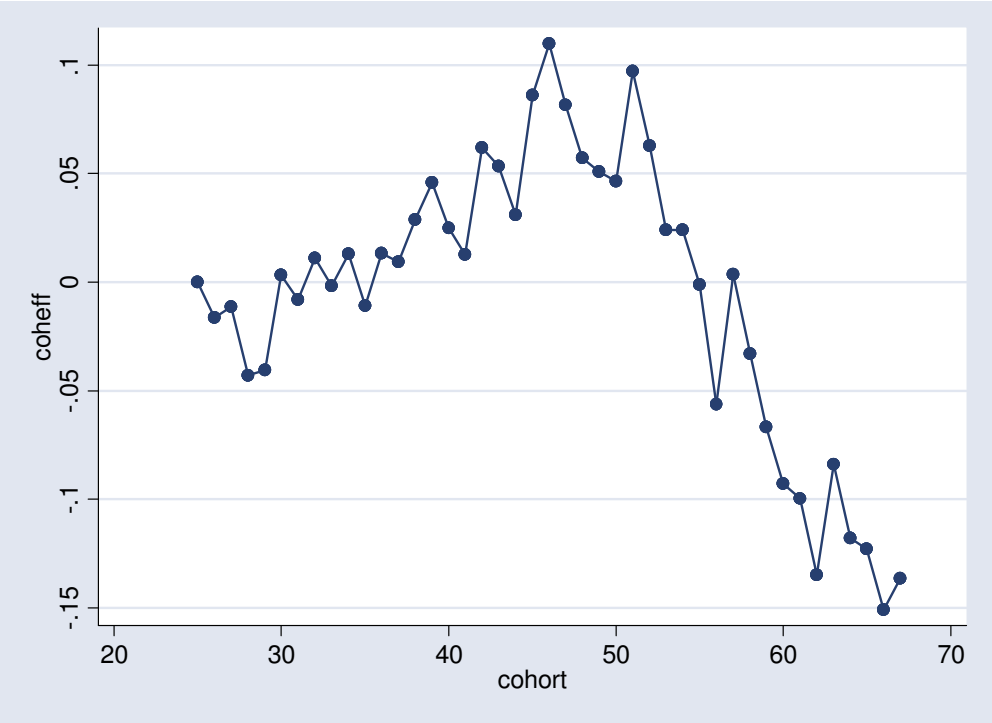

Figure 4.51: Cohort Effects in Median Saving Consumption Ratio

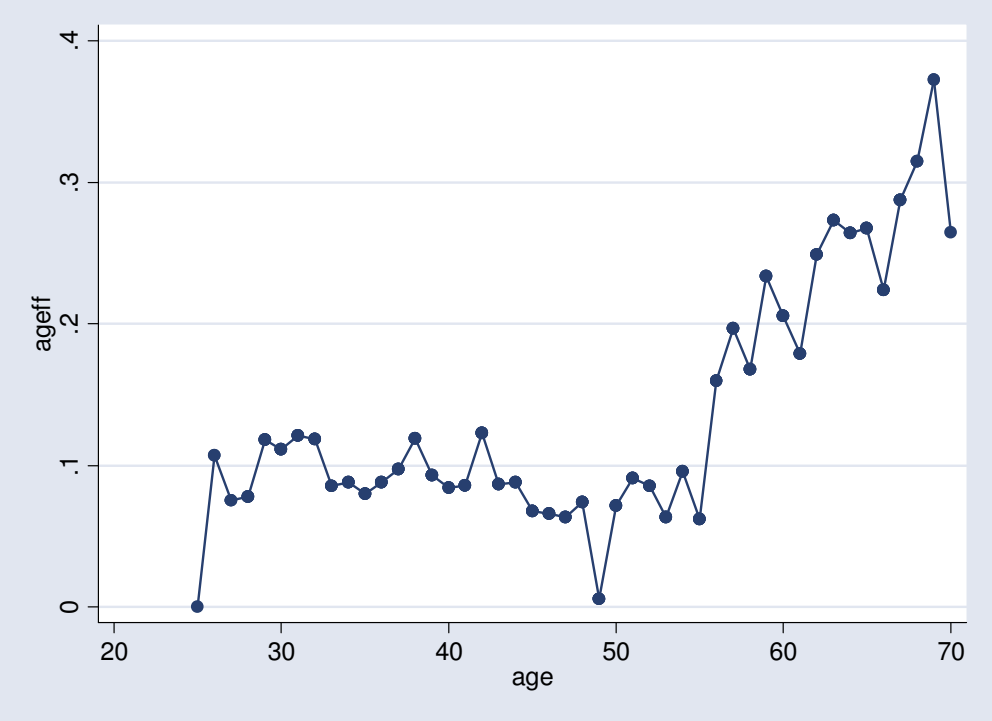

Figure 4.52: Age Effects in Median Saving Consumption Ratio

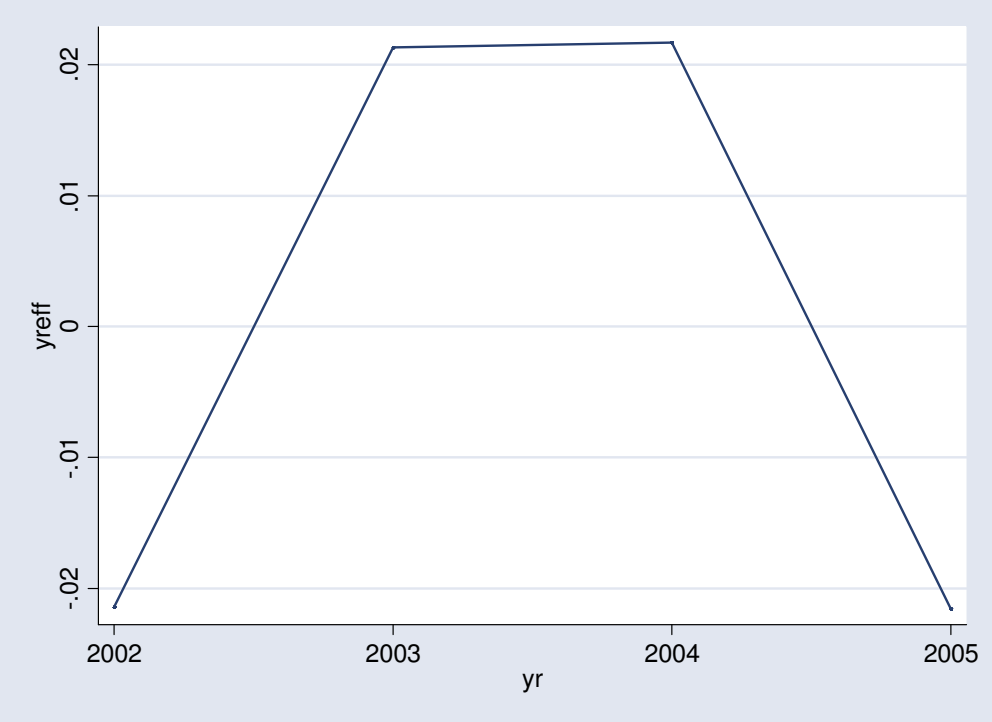

Figure 4.53: Year Effects in Median Saving Consumption Ratio

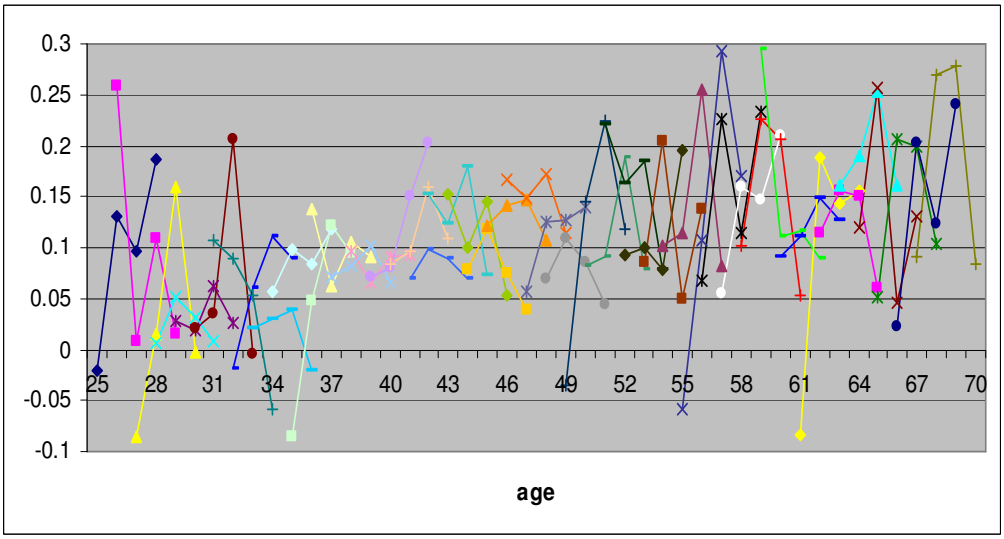

Figure 4.54: Median Saving Consumption Ratio by Cohorts (Primary School Graduates and below)

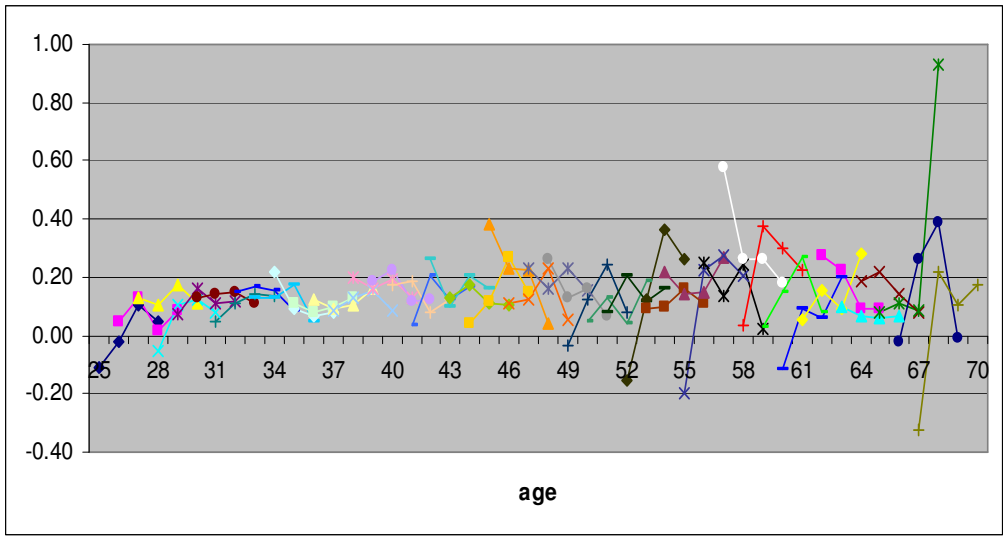

Figure 4.55: Median Saving Consumption Ratio by Cohorts (High School Graduates)

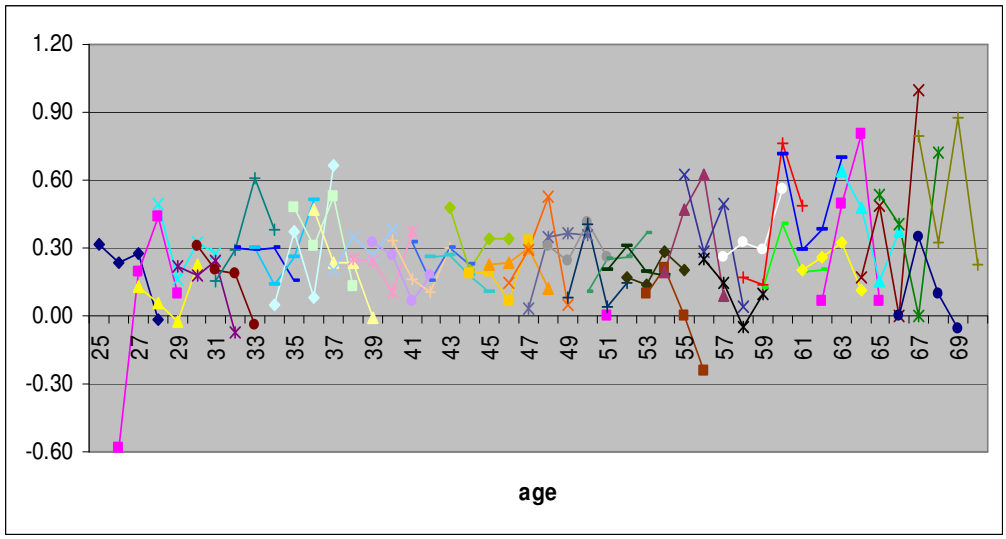

Figure 4.56: Median Saving Consumption Ratio by Cohorts (University Graduates)

4.4 Detailed Analyses of Income and Consumption

4.4.1 Components of Income

In order to investigate the life-cycle profile of income deeply, income is decomposed into labor income, interest income, real estate income, pensions and transfers. Analyzing the source of income may also help us to understand the relatively flat hump-shape of the total household disposable income, presented in Figure 4.17. Throughout the analyses of interest income, real estate income, pension income and transfers I have used the "means" while constructing the pseudo-panel due to the presence of high number of zeros which makes the median values zero as well. In the analyses of labor income I have used cohort averages to be consistent with the income decomposition and cohort medians to be consistent with the previous analyses.

4.4.1.1 Labor Income

The first component of the income to be analyzed is the labor income. As mentioned above, it includes wages, salaries, overtime bonuses, fringe benefits and payments in kind, agricultural and self-employed income and income from copyrights. I first plot the percentage of households with positive income by age (Figure 4.57).

As expected, the percentage of households with positive labor income is very close to unity until age 45 and declines thereafter with retirements. However, the magnitude and the speed of decline are very limited and so, far from expectations. For instance, Attanasio (1994) found sharp and large decline in the percentage of households with positive labor income after retirement for US, as expected. The existence of people who are working at their old ages could explain this slow

decline. Another reason could be that, the extended households resulting from merging of families can have an old household head and working individuals.

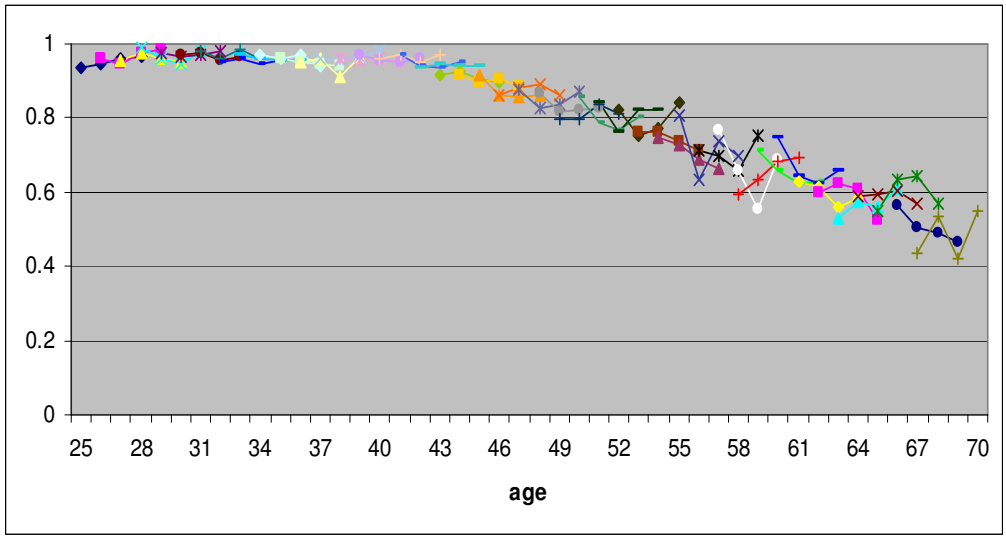

Figure 4.57: Percentage of Households with Positive Labor Income

4.4.1.1.1 Mean Labor Income

In Figure 4.58 the age profile for mean labor income is plotted. The profile increases until around age 50 and declines at retirement. The decline at retirement is not significant compared to the other countries such as Iran (Marku, 2004) or Taiwan (Deaton, 1997) due to the presence of labor income earners at the old ages that is found in Figure 4.57. The cohort effects, especially for the early part of the life-cycle, are also evident from the figure; the lines for younger cohorts are above the lines for the older cohorts. Cohort, age and year effects in labor income are presented in Figure 4.59, Figure 4.60 and Figure 4.61, respectively.

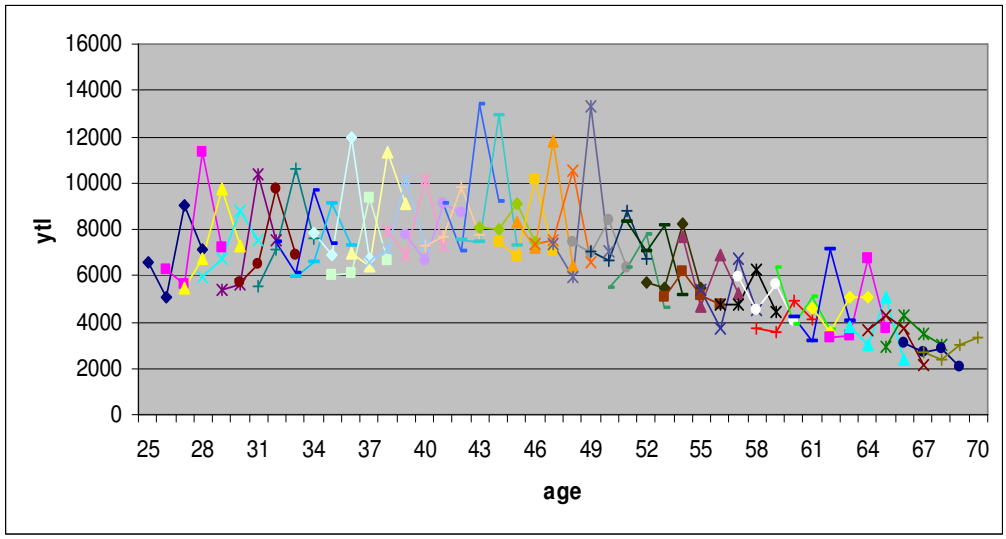

Figure 4.58: Mean Labor Income by Cohorts

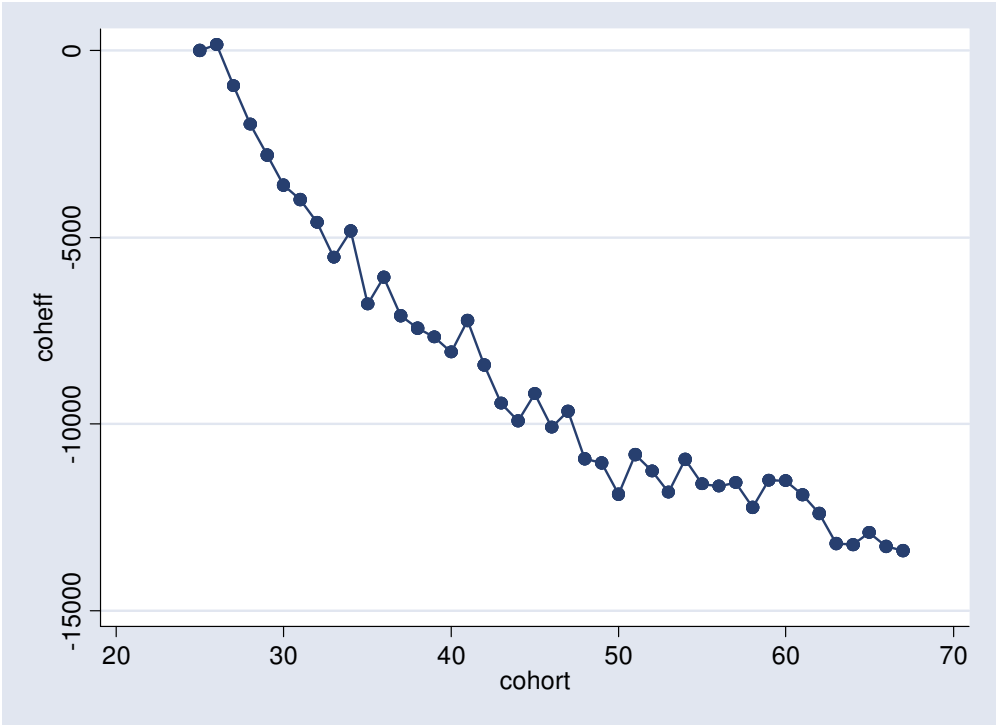

Figure 4.59: Cohort Effects in Mean Labor Income

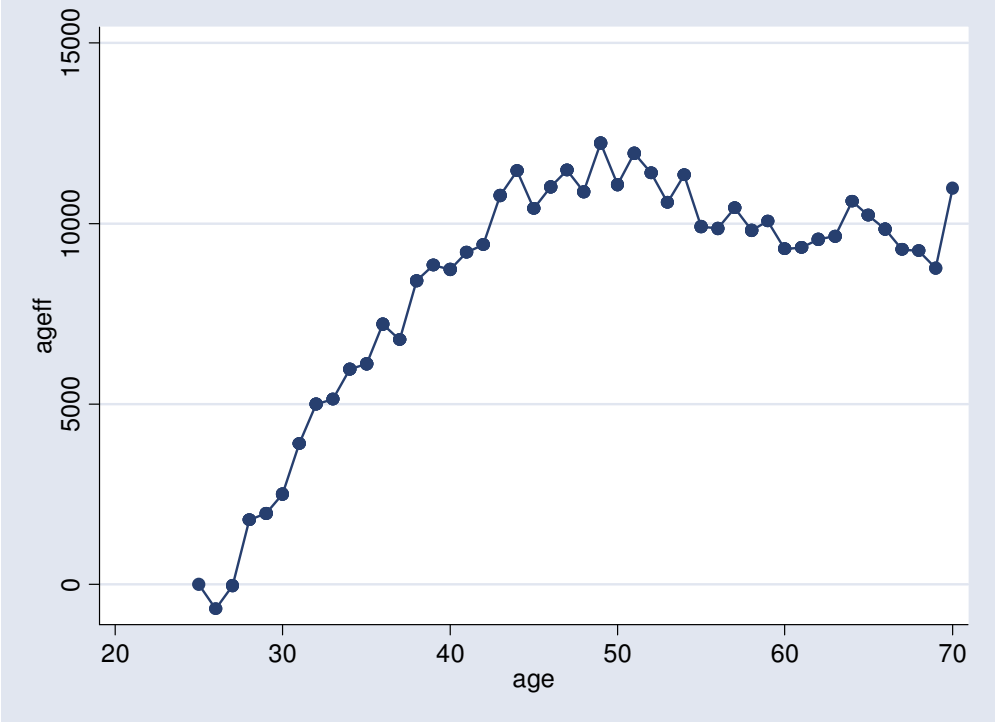

Figure 4.60: Age Effects in Mean Labor Income

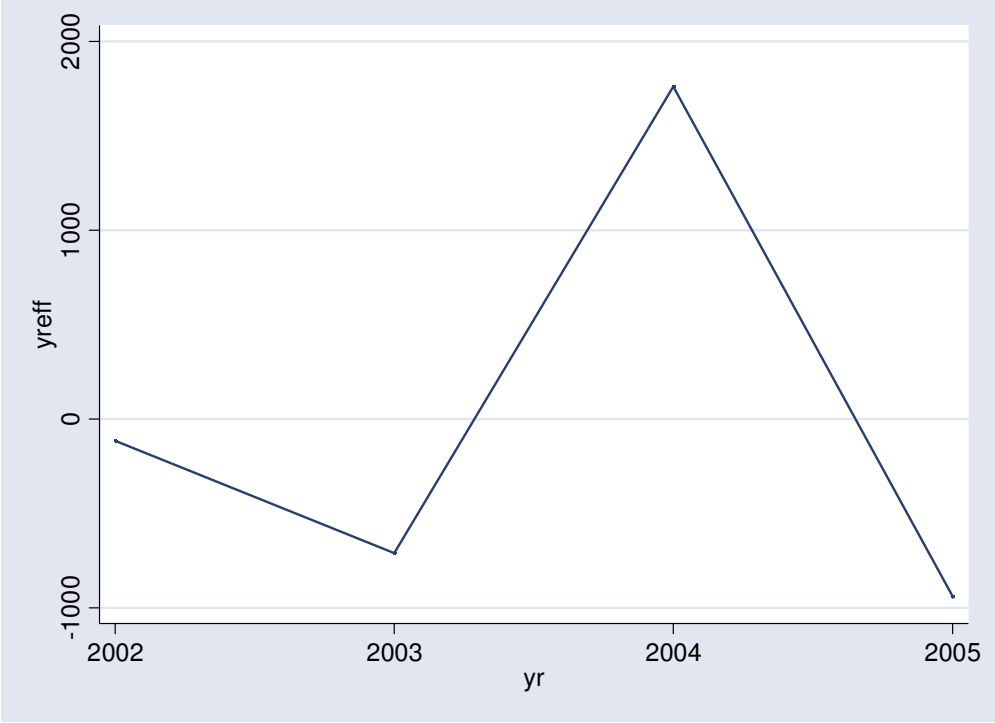

Figure 4.61: Year Effects in Mean Labor Income

The visual findings of Figure 4.58 regarding the cohort effects are supported by Figure 4.59; there are strong cohort effects for the younger cohorts and it is declining with age. Thus, it could be said that, there has been a significant acceleration in the rate of growth for the younger cohorts. In Figure 4.18 it was found that cohort effects in household income are declining with age of the cohort in 2002, constantly. When we compare both cohort effects we see that, the cohort effects in labor income is declining faster for the young cohorts and declining slower for the old cohorts relative to household income. When we look at the year effects, we see that, the inverted V-shape observed at the end of the age profile of each cohort in Figure 4.58 is verified in Figure 4.61.

4.4.1.1.2 Median Labor Income

The median labor income against the age of the household head is plotted in Figure 4.62. The comparison of median labor income with the mean labor income (Figure 4.58) reveals that working with medians decreases the variability. Moreover, regarding the levels, medians are lower than means due to the skewness of income distribution. The median labor income profile exhibits a sharp decline following retirement relative to mean labor income profile which indicates that the small cell sizes for older cohorts are affected from the existence of very high income earners. It was shown that the number of nuclear families is higher for the least educated group, that is, the old households prefer to live with their children. This situation and the negative relationship between the wealth and mortality could be responsible from this difference in mean and median profiles after retirement. Once again the cohort effects, age effects and income effects are identified and the results are presented in Figures 4.63 to 4.65.

The cohort effects in median labor income are found to decrease with age until the middle of fifties and exhibit a flat pattern thereafter. For the age profile a hump shape is found as expected. Compared with findings of mean data, this situation could indicate the existence of very high income earners at old ages, the reasons of

which are explained in the above paragraph. The hump shaped age profile of median labor income (Figure 4.64) and concave shaped age profile of median household income (Figure 4.19) stress the fact that, older households have other sources of income that prevents a decline in their family income.

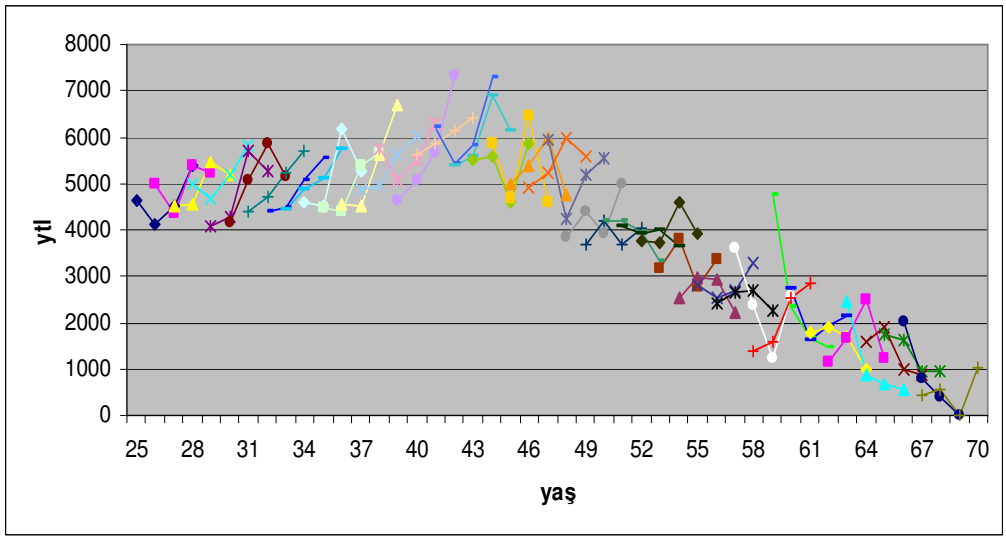

Figure 4.62: Median Labor Income by Cohorts

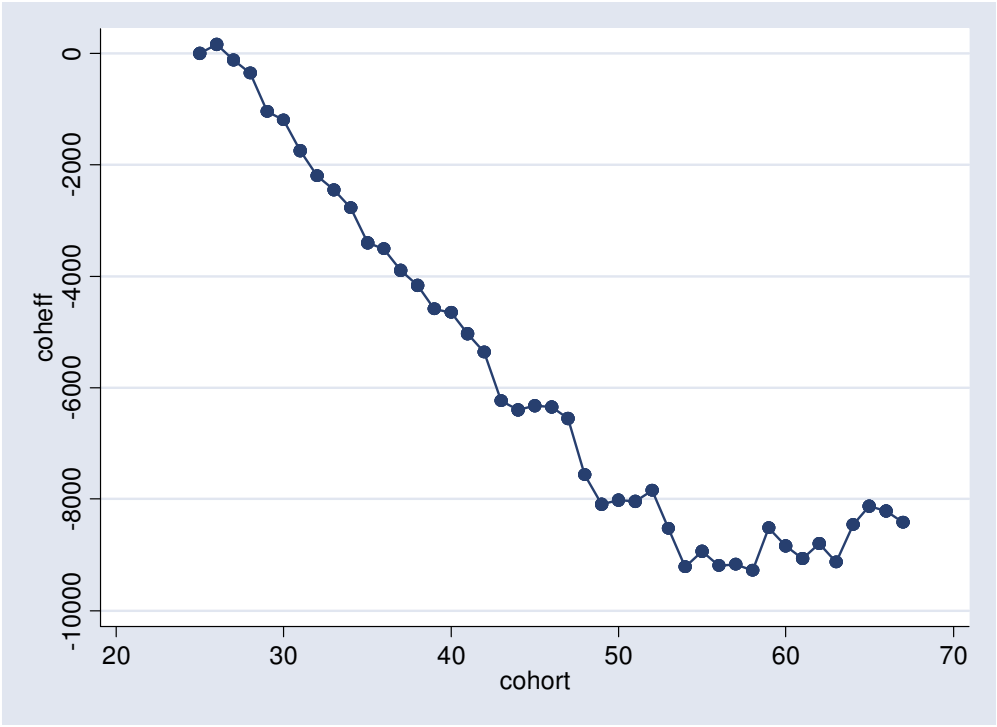

Figure 4.63: Cohort Effects in Median Labor Income

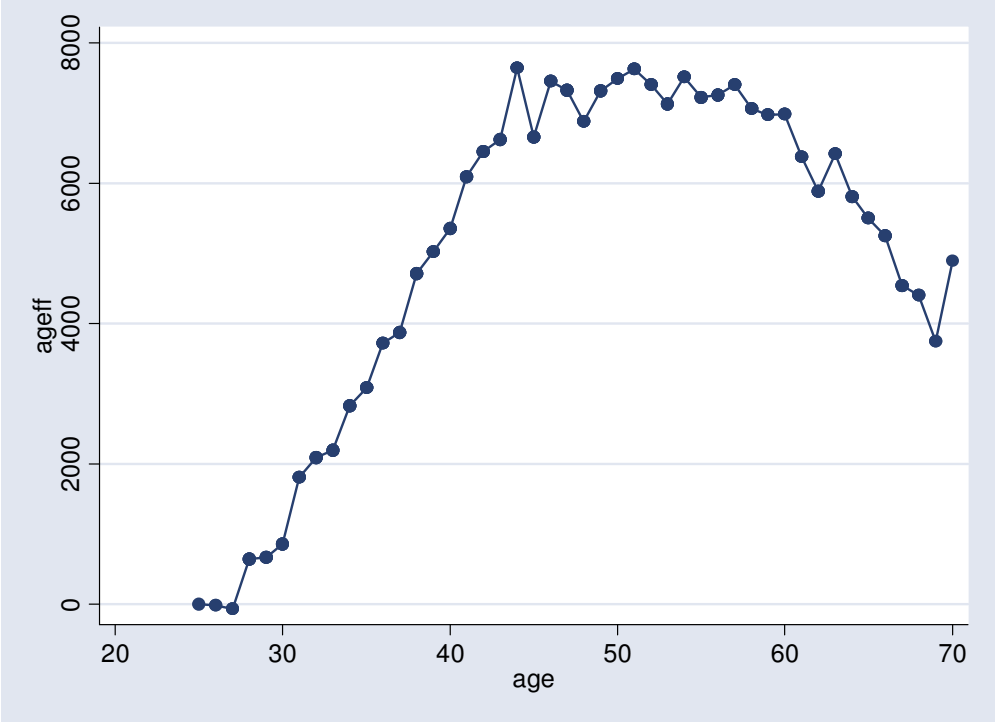

Figure 4.64: Age Effects in Median Labor Income

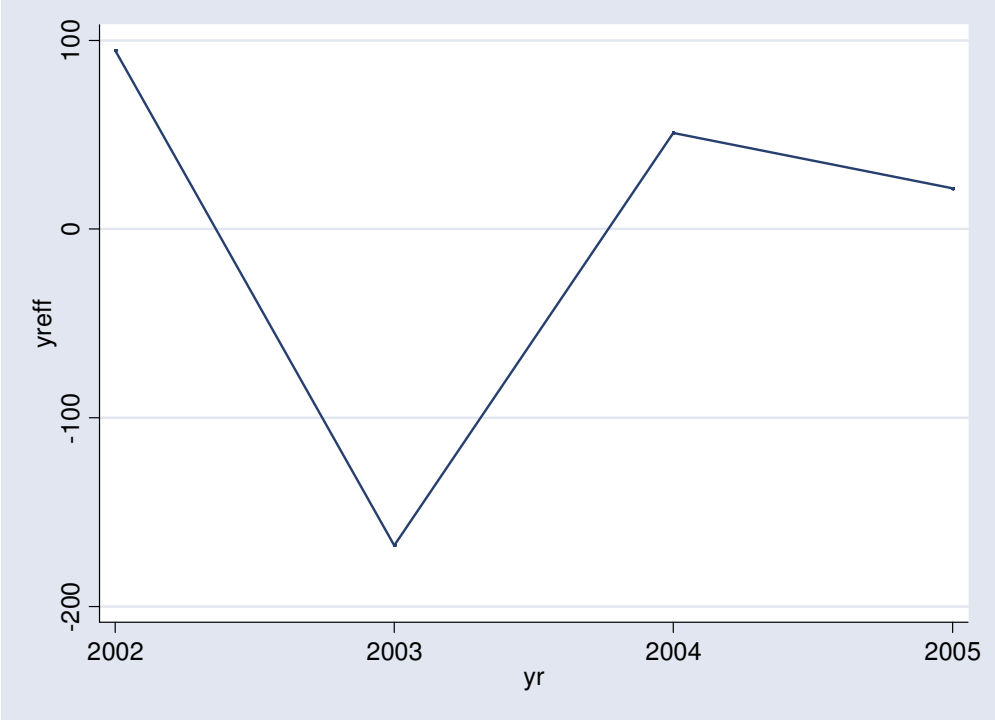

Figure 4.65: Year Effects in Median Labor Income

4.4.1.2 Interest Income

In this part of the study, interest income which includes interest and dividends is analyzed. Firstly, the percentage of households with positive interest income is plotted against the age of the household head (Figure 4.66). The proportion of households receiving interest income increases until the around age 45, thereafter declines until age 60 and flattens out after that. The proportion is very low with a maximum of around 30 percent. One possible explanation of the observed shape could be motivation for housing. Households save for housing at the early part of the life-cycle and buy a house in the middle-ages. Attanasio (1994) found an increasing shape with age for the US households.

Figure 4.67 plots the profile for mean interest income. Some facts emerge from the figure. First of all, the magnitude of interest income is very small. The small cell sizes lead to outliers and the variability of the cohort profiles[36]. A hump shape is apparent from the figure which is consistent with the findings of Figure 4.66.

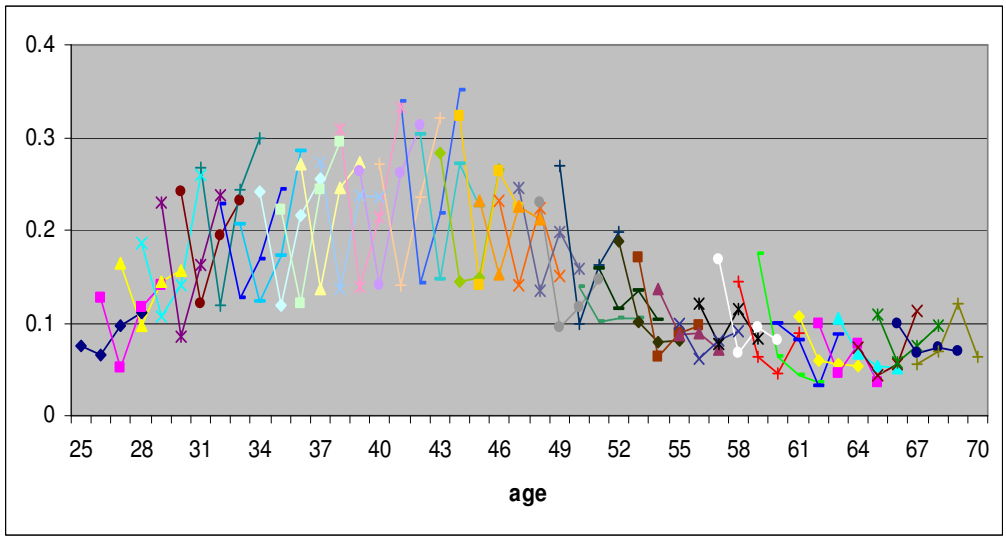

Figure 4.66: Percentage of Households with Positive Interest Income

[36] Variability is easily observed when the outliers are dropped from the data.

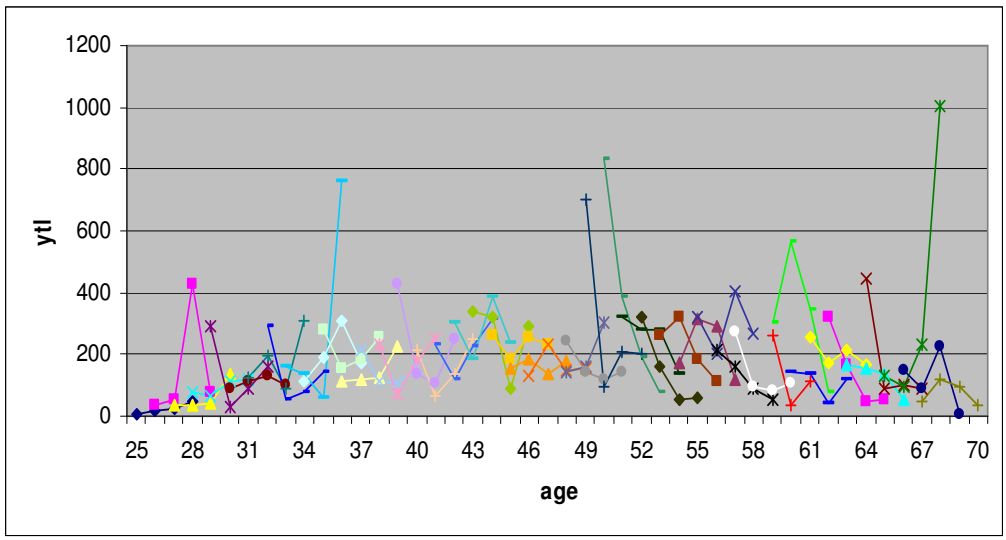

Figure 4.67: Mean Interest Income by Cohorts

4.4.1.3 Real Property Income

Figure 4.68 presents the percentage of household heads with positive real property income against the age of the households head. The proportion of households receiving real property income is found to be increasing with age, a profile similar to the interest income found by Attanasio (1994) for the US households. A possible interpretation of this fact could be that Turkish households prefer to invest their money in real estate in time, whereas their counterparts in US prefer interest bearing assets. When we look at the last parts of the life-cycle a negative cohort effects are evident; the older cohorts prefer to invest in real estate more than their predecessors. Another point worth mentioning is that the percentage of households with positive real property income is low; at most 30 percent of household heads have positive income. If we consider Figure 4.66 and this figure, it could also be said that, Turkish households accumulate asset and earn interest income for housing purposes. Of course, the selection bias could also be a reason for the increasing profile.

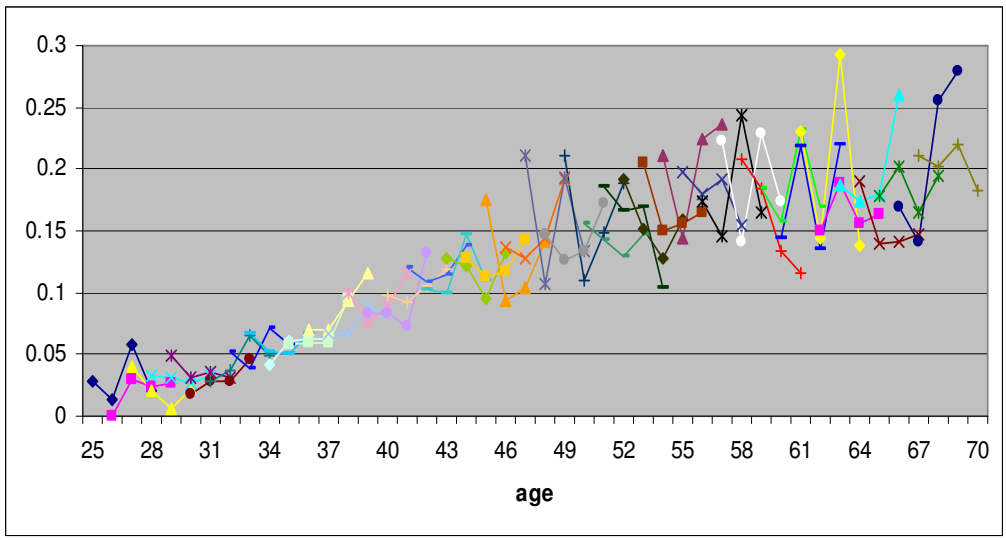

Figure 4.68: Percentage of Households with Positive Real Property Income

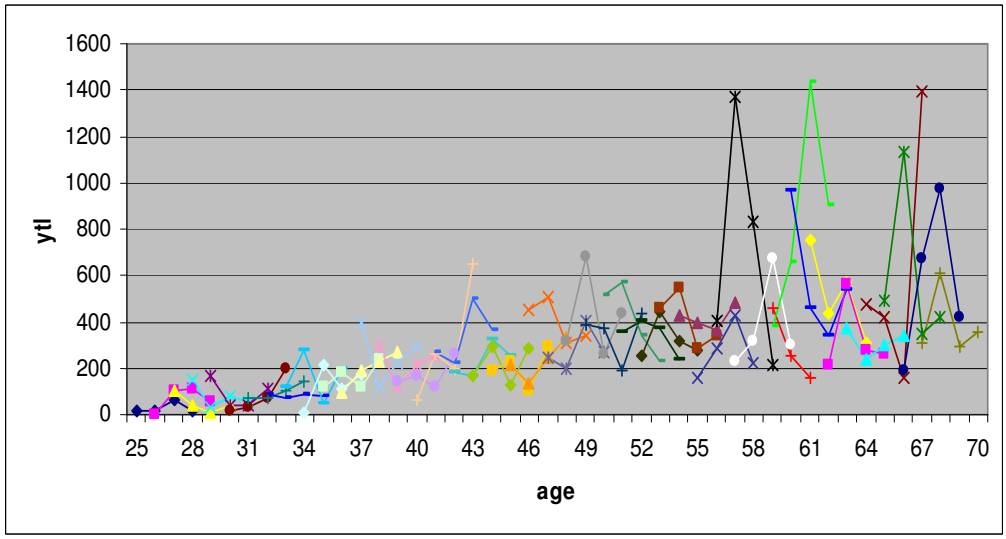

Figure 4.69: Mean Real Property Income by Cohorts

A similar increasing profile is also observed for the mean real property income (Figure 4.69). The magnitude of the real property income is higher than the interest income, which verifies the fact that Turkish households prefer to invest in real estate.

4.4.1.4 Transfer Income

Transfer income includes pension arrears, unemployment and illness compensation, student grants, alimony, remittances and payments in kind. Our analyses begin with plotting the percentage of the households with positive transfer income (Figure 4.70). The important feature of this picture is the steady and strong increase (for most of the cohorts) of the average income. In addition, there are strong cohort effects especially for the younger cohorts; that is, the younger cohorts are more likely to have transfer income which could be due to the improvements in Social Security System such as the introduction of the unemployment compensations. Strong cohort effects and increasing age profiles for almost all cohorts lead to an increasing profile. While at the early part of the life-cycle around 40 percent of the household heads receive transfer income, at the older ages it increases to nearly 90 percent.

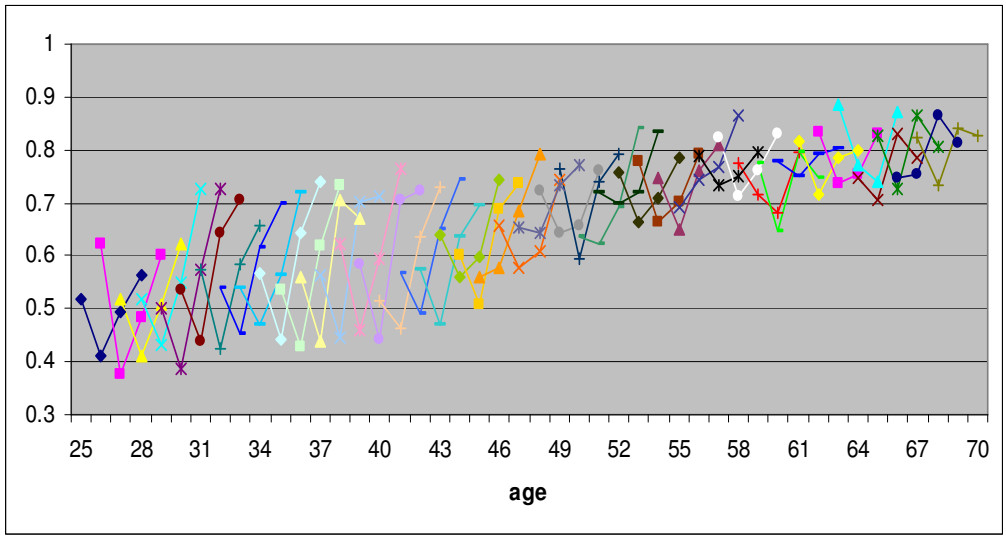

Figure 4.70: Percentage of Households with Positive Transfer Income

A slight increase in the mean transfer income profile is seen in Figure 4.71. Although the percentage of households receiving transfer income is high, its amount is limited. Similar to Figure 4.70, cohort effects are evident for the younger cohorts;

in other words, younger cohorts are better off in terms of transfer income which could be due to the improvements in the Social Security System. For both of the above graphs, a decline from 2002 to 2003 (the first two points on each cohort profile) is observed for almost all young cohorts. This could be due to the decline in unemployment compensations which increased with the 2001 crises.

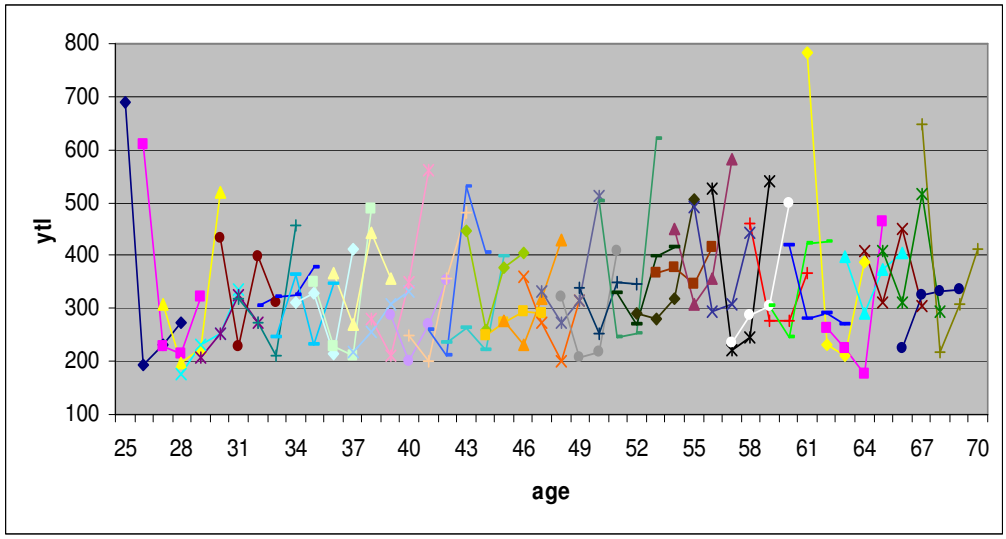

Figure 4.71: Mean Transfer Income by Cohorts

4.4.1.5 Pension Income

The final component of income to be investigated is pension income. Similar to the previous analyses, I first plot the share of households with positive pension income (Figure 4.72). The first thing to be emphasized is that although the proportion of households receiving pension income is very low and the profile is flat for the first part of the life-cycle, it never becomes zero which could show the living of old parents with their children. The profile is increasing with age following age 45, and flattens out around age 58. The rise in the profile occurs at around sixties in US (Attanasio, 1994) due to the difference in the retirement age. What is expected from the profile is to reach values close to unity at the end of the life-cycle, whereas, for Turkish households, it stays around 80 percent. This could emerge from the facts

that some of the households could prefer not to retire and keep on working, or most probably, some of the old households are not covered by any social security system.

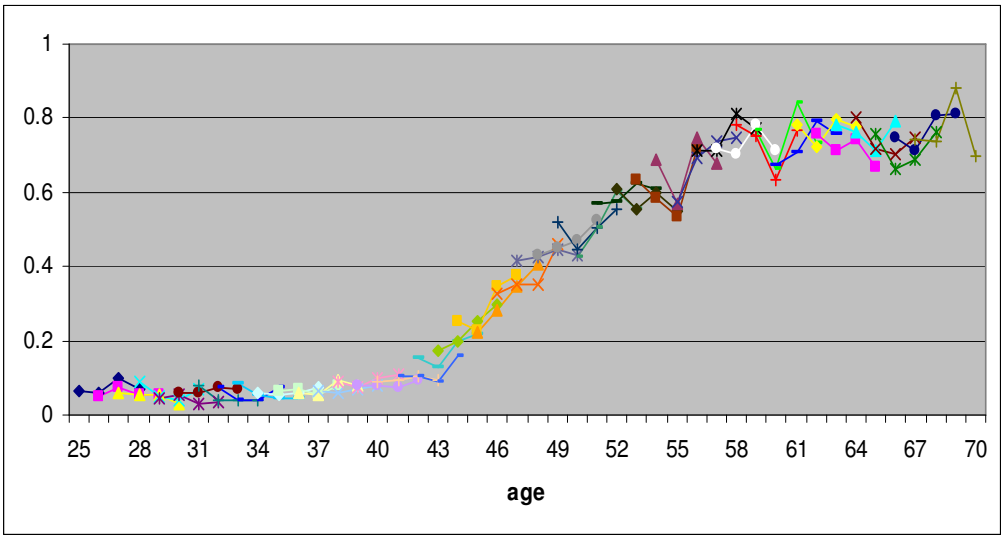

Figure 4.72: Percentage of Households with Positive Pension Income

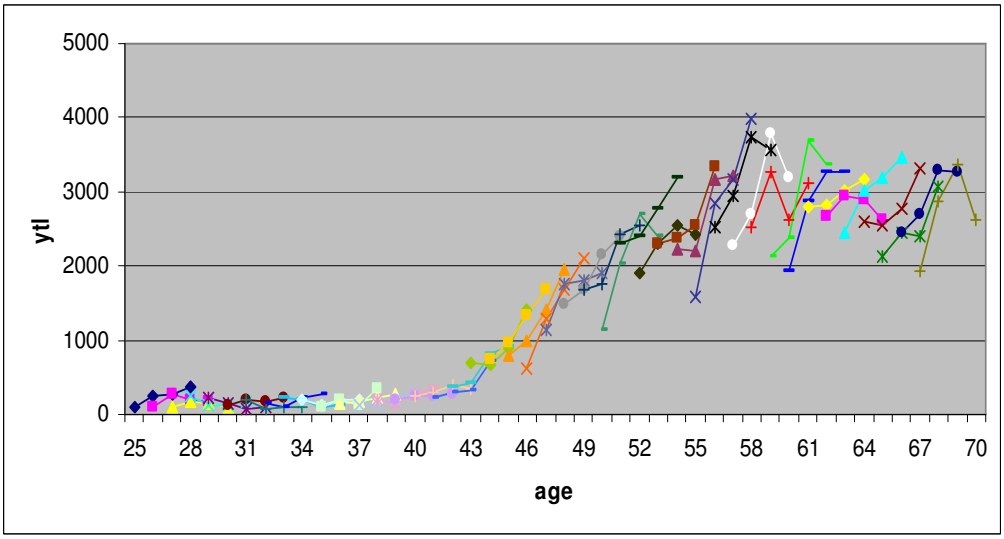

Figure 4.73: Mean Pension Income by Cohorts

Figure 4.73 presents the profile for mean pension income which is parallel to the one given in Figure 4.72. The amount of pension income is very close to zero for the younger cohorts; however, it increases to around 4000 YTL at retirement. When

we compare this amount with the other components of income, it could be said that pension income has significant contributions to the household budget. The observed slight hump shape in mean total income could emerge from relatively high pension income of the older household heads. The existence of cohort and age effects observed for the last part of the life-cycle result in upward profile[37] (Figure 4.73).

4.4.2 Components of Consumption

In this section, the components of consumption expenditure are analyzed. Decomposition of the consumption expenditure is important because expenditure data includes the durable commodities and some services whose effect lasts in time (such as health care and education) and those items could be considered as saving as well. Moreover, it is also important within the life-cycle model framework since the durability brings the intertemporal nonseparability in the utility function (Attanasio, 1994). In this respect, we decompose the consumption into four components; durable consumption, education expenditures, health expenditures and nondurable consumption.

4.4.2.1 Nondurable Consumption

In Figure 4.74 median nondurable consumption and in Figure 4.75 mean nondurable consumption are plotted against the age of the household head. This excludes all expenditures on health, education and durables. The semi-durables such as clothes are considered nondurable.

The profiles for both mean and median consumption are very similar to the total consumption profile; therefore they do not deserve any further comment.

[37] For the cohort effects, each line for a younger cohort lies above the line of the next older cohort. For the age effects, each line of the cohorts follows an increasing trend.

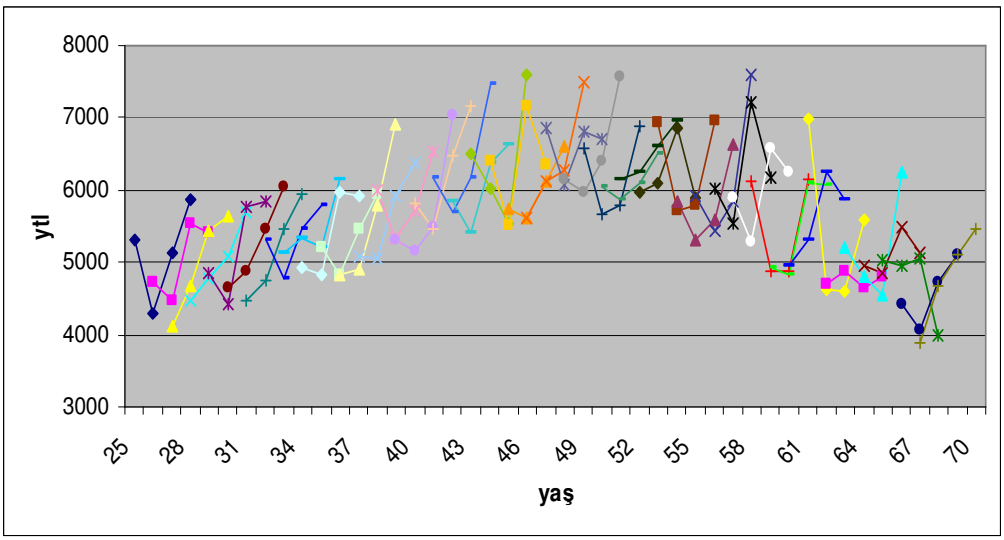

Figure 4.74: Median Nondurable Consumption by Cohorts

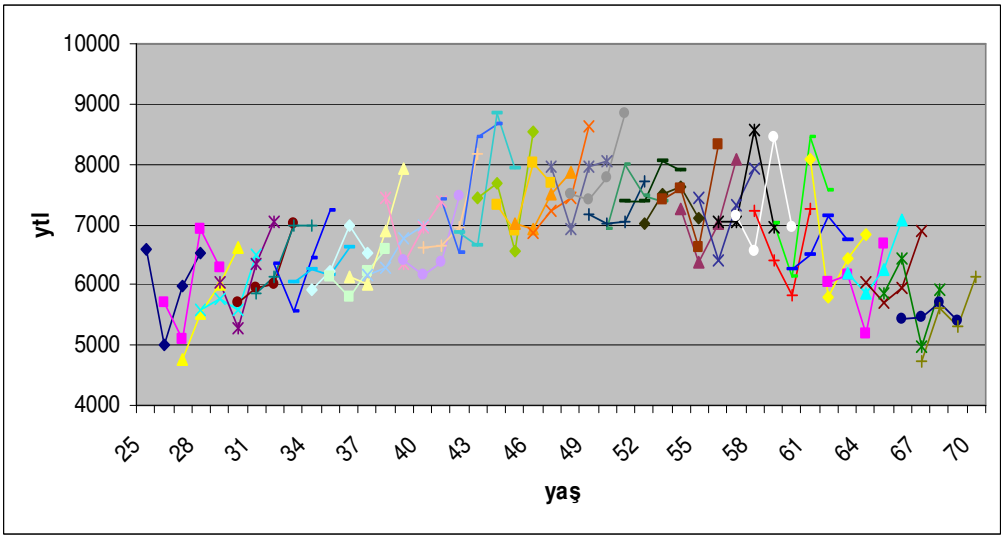

Figure 4.75: Mean Nondurable Consumption by Cohorts

4.4.2.2 Education Expenditures

The presence of increasing returns to education in Turkey (see, for example Tunaer and Gürcan, 2006) makes the investigation of the education expenditures an important aspect. The investment property of education via its contribution to the human capital process also increases the importance of education analyses. Figure

4.76 and Figure 4.77 exhibit the age profile of average education expenditure and its share in average total household consumption.

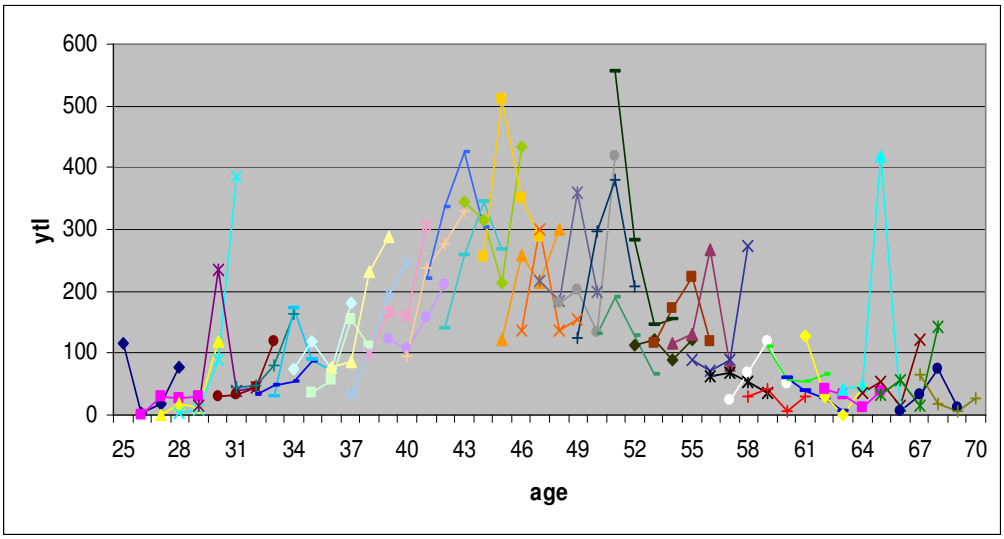

Figure 4.76: Mean Education Expenditure by Cohorts

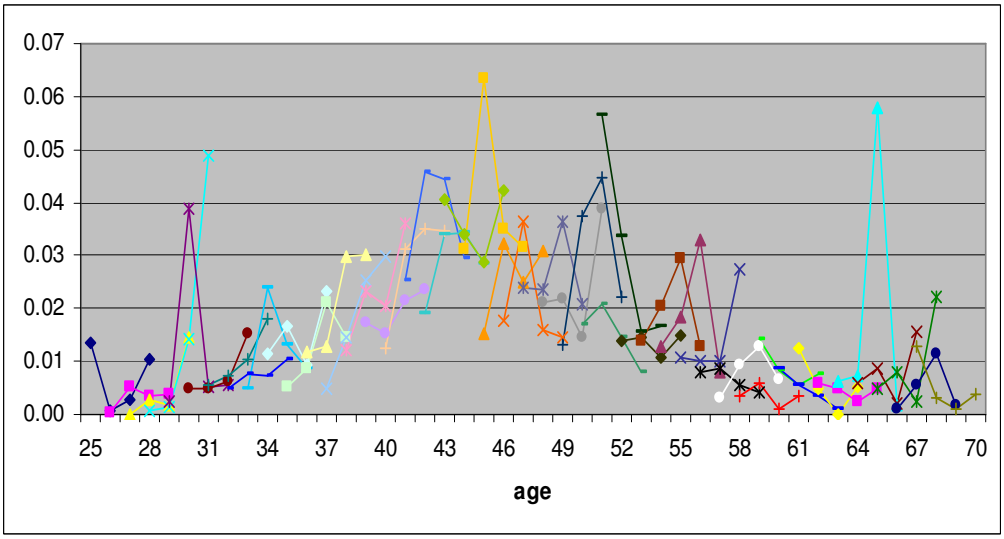

Figure 4.77: Share of Education Expenditure in Total Consumption

The profiles for education expenditure could be affected from the number of children therefore we expect them to have hump shape. When we compare the above profiles with the profile for number of children, although the hump exists in

all graphs, the shapes seem somewhat different. The age profile for number of children peaks at earlier ages. An interesting fact emerging from Figure 4.77 is the very low share of education expenditures. For example, the same share reaches to 30 percent for the US (Attanasio, 1994) but it should be noted that there are significant differences between the education systems in Turkey and US. The small cell sizes should be kept in mind while interpreting the results.

4.4.2.3 Health Expenditure

Health expenditures could also be considered, to a certain extent, a form of investment. In this respect, I analyze the expenditures related with the health care and its share in total consumption by the help of Figures 4.78 and 4.79. Surprisingly, instead of increasing profiles, very flat profiles are presented in the below figures. This flat profiles and low shares could indicate the good coverage of the Turkish Social Security System. Although not so strong, there are still cohort effects in health expenditures; in other words, the younger the cohort the higher is its health expenditure.

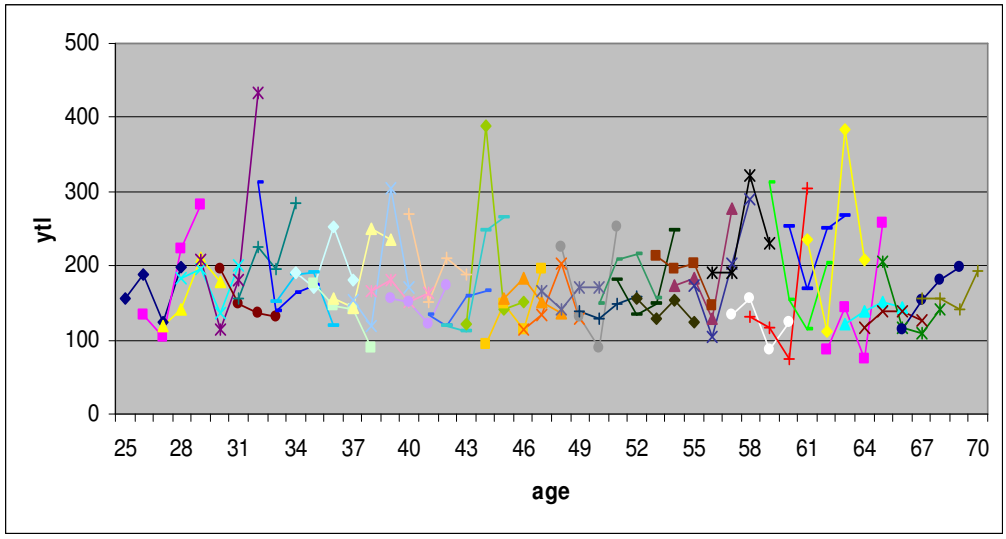

Figure 4.78: Mean Health Expenditure by Cohorts

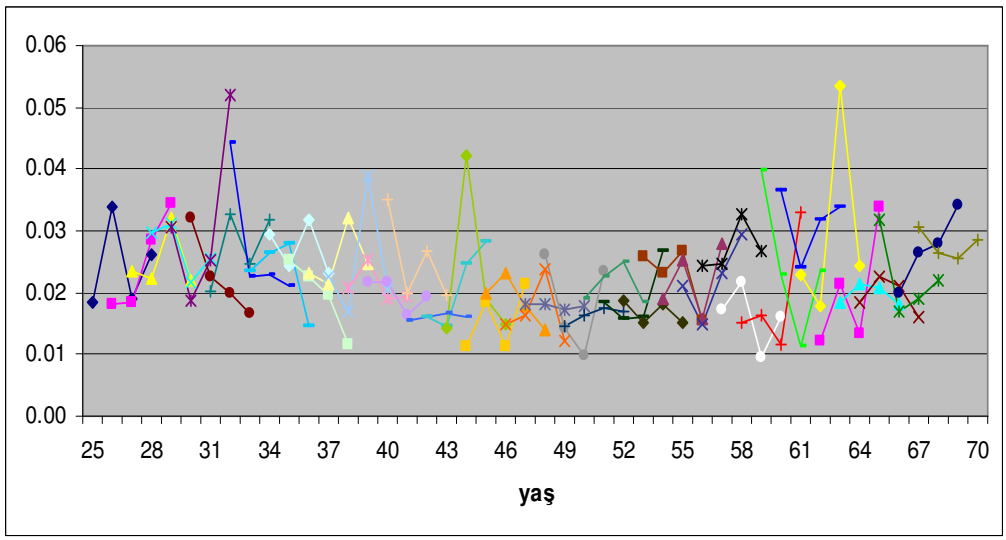

Figure 4.79: Share of Health Expenditure in Total Consumption

4.4.2.4 Durable Consumption

Finally, the durable consumption expenditures are analyzed in Figure 4.80. The figure presents a slight hump shape. The decrease in the last part of the life-cycle is something that is expected. Cohort effects are also evident; at a given point in time, younger people have higher durable consumption. This finding could help us to understand the difference between the two definitions of saving rate. Different from the previous saving rate definition which exhibits an increasing profile for the young cohorts (Figure 4.40), a decreasing cohort effect profile was found for the wider definition of saving rate (Figure 4.47). Moreover, while the age effects profile for the first definition of saving rate exhibits a flat pattern for the young ages (Figure 4.41), an increasing profile is found for the wider definition (Figure 4.48). The higher purchases of durables of the youngest cohorts evident from Figure 4.80 could be the reason for such a difference. Following 2003, the appreciation of TL increases the durable expenditures which is seen from the figure as an increase in the last survey years for almost all cohorts.

The shares of durable expenditures are reported in Figure 4.81. The slight hump shape found in mean durable consumption (Figure 4.80) is also evident in Figure 4.81. The share of durables is higher than education and health expenditures; however it is below the 10% level. We observe strong cohort effects which indicate the higher durable expenditures by younger cohorts, as mentioned above.

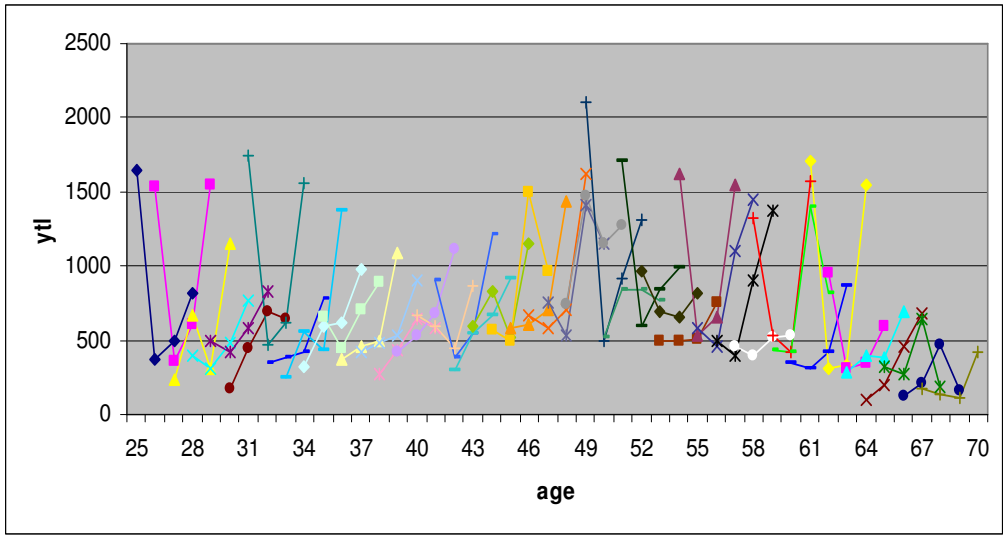

Figure 4.80: Mean Durable Consumption by Cohorts

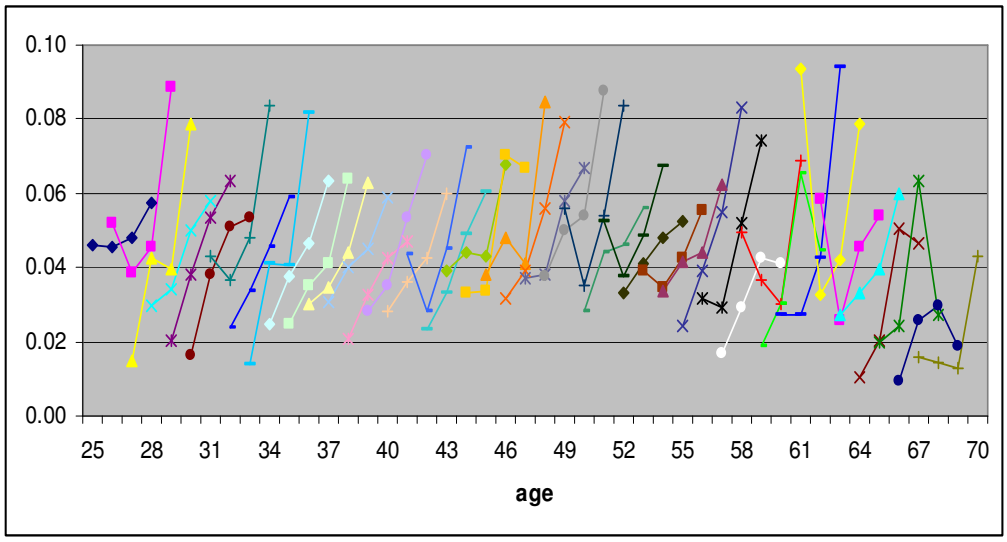

Figure 4.81: Share of Durable Expenditure in Total Consumption

4.5 Analyses for Rural and Urban Households

Income, consumption and saving dynamics could differ for the rural and urban households. Therefore, investigating these variables in rural and urban bases might lead to a better understanding of the issue. In this respect, the analyses in the previous part are replicated by dividing the sample into urban and rural households.

4.5.1 Household Composition and Educational Attainment of Rural and Urban Households over Life-Cycle

As mentioned before, household structure is closely related to the consumption and saving decisions. Moreover, if there are any differences between income, consumption and saving of the rural and urban households, one of the possible reasons could be the differences in household composition. Therefore, I analyze the household structures in rural and urban areas and in this respect, first check for the household sizes.

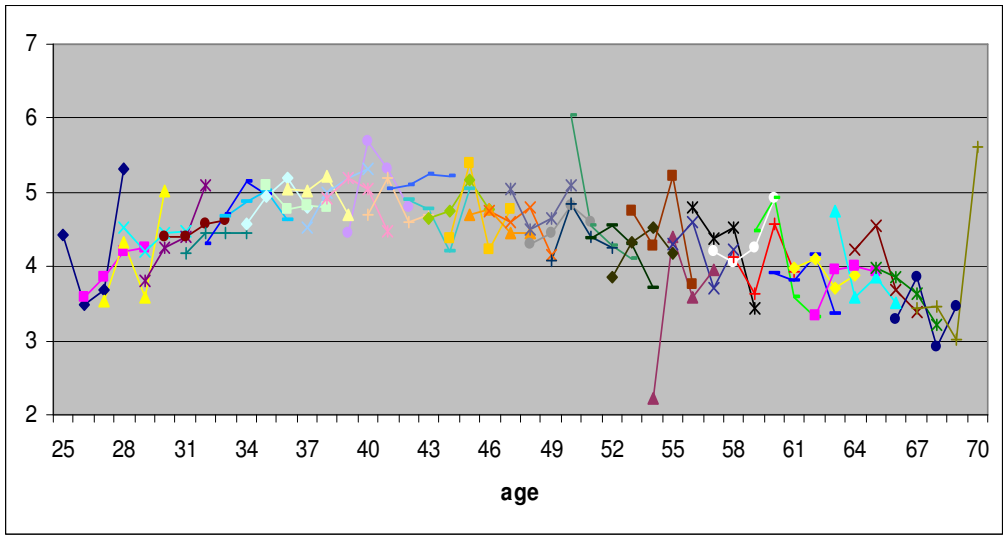

Figure 4.82: Household Size by the Age of the Household Head (Rural)

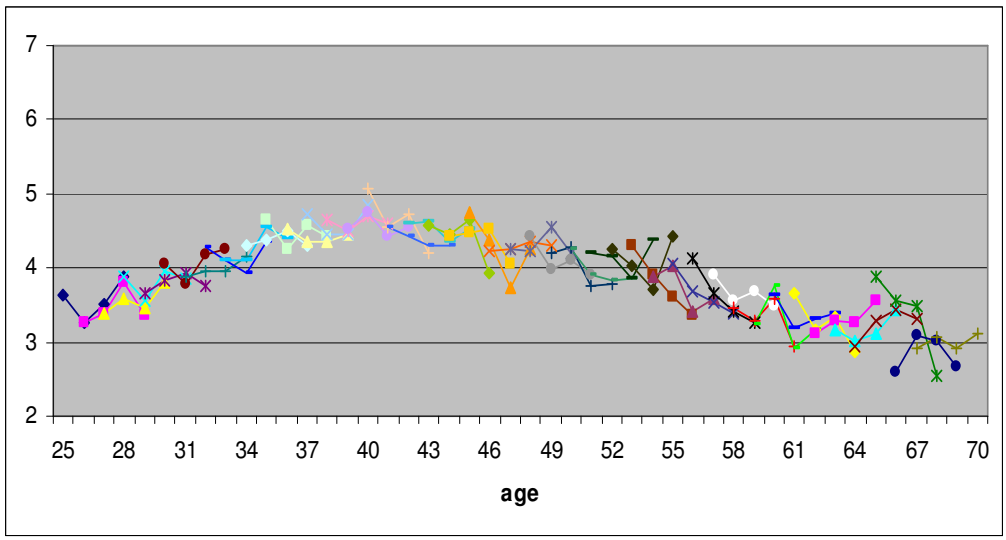

Figure 4.83: Household Size by the Age of the Household Head (Urban)

We may expect to see differences in the household sizes since the families living in the rural areas generally have more children, and they are more likely to live with their married children. Figure 4.82 presents the household size for the rural areas and Figure 4.83 for the urban areas.

According to the above figures, the rural households are more crowded than the urban households. The profile of urban households peaks at older ages relative to rural households. The higher variation in rural household profile can be due to different household sizes and/or lower cell size. In addition, no cohort effects are observed for the first part of the life-cycle in the urban household data.

In order to investigate the merging of families, the number of nuclear families living in the same house is plotted against the age of the household head for rural and urban households in Figure 4.84 and Figure 4.85, respectively.

Both figures present somewhat u-shape profiles. The number of families are decreasing with age until the middle ages and increasing thereafter. This u-shape states the merging of families in the two edges of the life-cycle. When we compare the profiles for urban and rural households we see that the number of families living

in the same household is higher in rural areas. Moreover, while the decrease in the middle-ages is more significant in urban household data, rural profile exhibits relatively flat pattern.

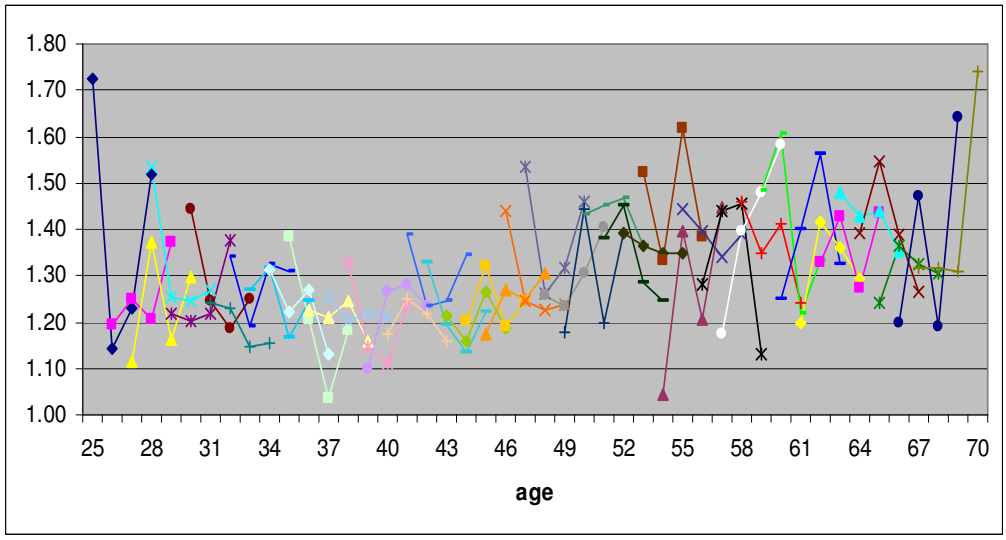

Figure 4.84: Number of Nuclear Families by the Age of the Household Head (Rural)

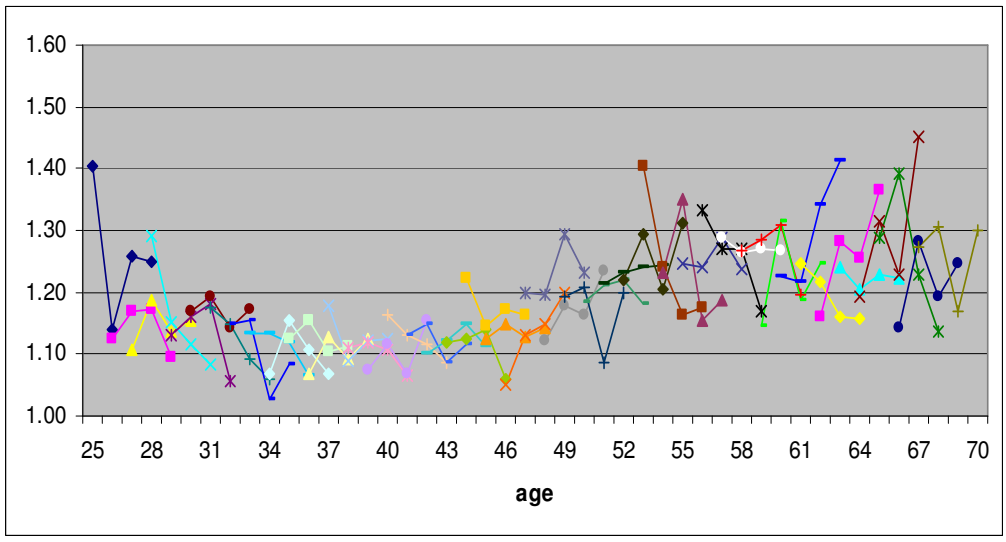

Figure 4.85: Number of Nuclear Families by the Age of the Household Head (Urban)

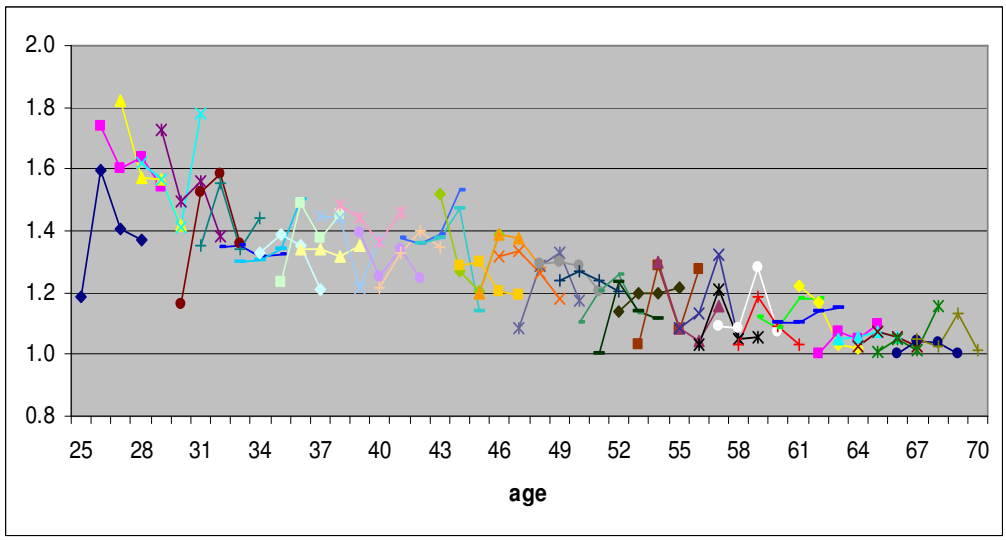

Figure 4.86: Average Educational Attainment of the Household Heads (Rural)

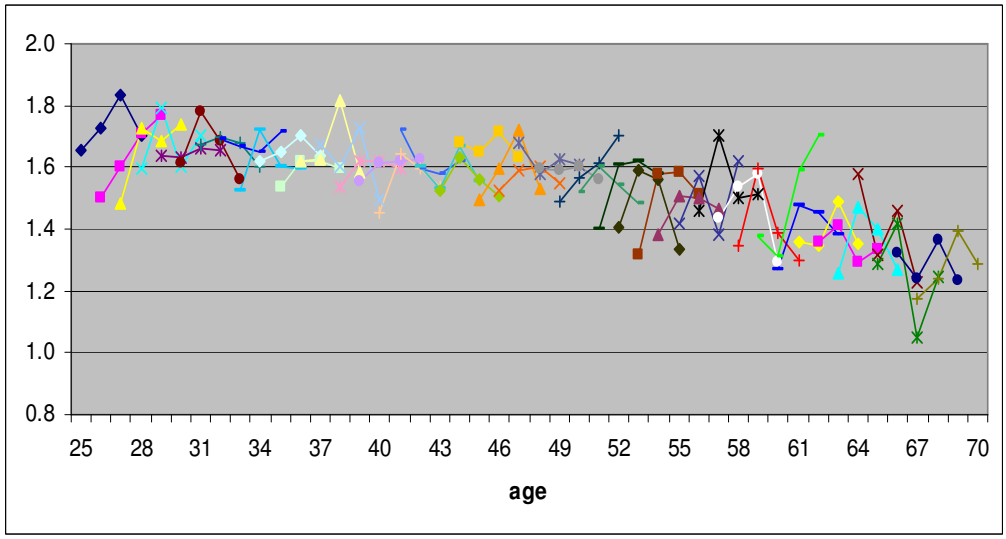

Figure 4.87: Average Educational Attainment of the Household Heads (Urban)

Education is highly related with income. In this respect, analyzing the educational attainment level of household heads over the life-cycle could help us to understand the dynamics of income, consumption and saving throughout the life-cycle. In addition to that, the possible differences for the variables of interest between the urban and rural households could be due to their differences in education levels. In this respect, the educational attainments of the household heads are plotted against

the age of the household head. Educational attainment level is coded as follows: 1 for primary school and below, 2 for high school graduates and 3 for university graduates. Figure 4.86 displays the households living in the rural areas and Figure 4.87 in the urban areas.

It could be seen that, urban household heads are more educated than the rural household heads. While the educational attainment decreases steadily throughout the life-cycle for the rural households, the decrease is very slight until the age 60s for the urban households. It was found that the household size is larger for the least educated group (Figure 4.12). In this respect, the lower education of rural households found above can be a reason of the greater household size in rural areas.

4.5.2 Labor Supply

Labor supply decision not only affects the income of households but also their consumption and saving decisions. For example, working could lead to extra expenditures such as transportation. The effects of labor supply decision are significant especially for the female labor force participation. When wife begins to work, the home production is replaced with market goods. In addition to that, female labor supply could also lead to a decrease in saving for precautionary reasons by diversifying the risk. Therefore, while analyzing consumption and saving, the labor supply decision should be kept in mind.

Figure 4.88 and Figure 4.89 present the male and female labor participation rates for the rural households, respectively. Male and female labor participation rates for the urban households are given in Figure 4.90 and Figure 4.91.

The first thing to mention regarding the graphs is the strong differences between the male and female participation rates. The female participation rates for the rural households present a hump profile. Following the fertile years of women, labor force participation increases, it peaks around forties and declines thereafter. This

kind of a profile is expected since women work at jobs that need physical power in rural areas. When we look at the urban households, female labor force participation exhibits a flat pattern until the age 40 and then declines (especially with retirement) even to the rates very close to 0. We also observe cohort effects for that group. If we compare rural and urban female labor force participation rates, it is evident that the rate for the rural is much higher than the urban. These profiles should be kept in mind while interpreting the profiles of income, consumption and savings.

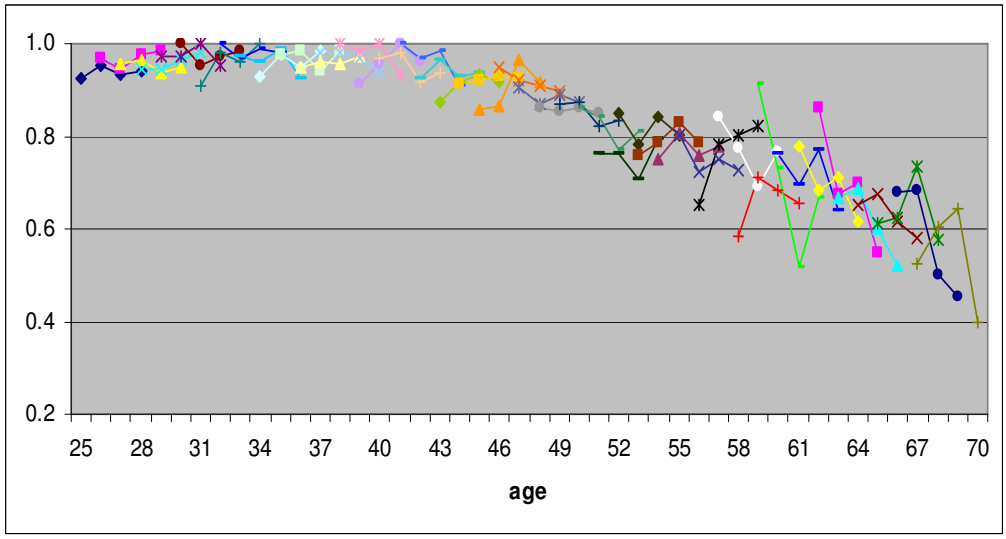

Figure 4.88: Male Labor Force Participation Rate (Rural)

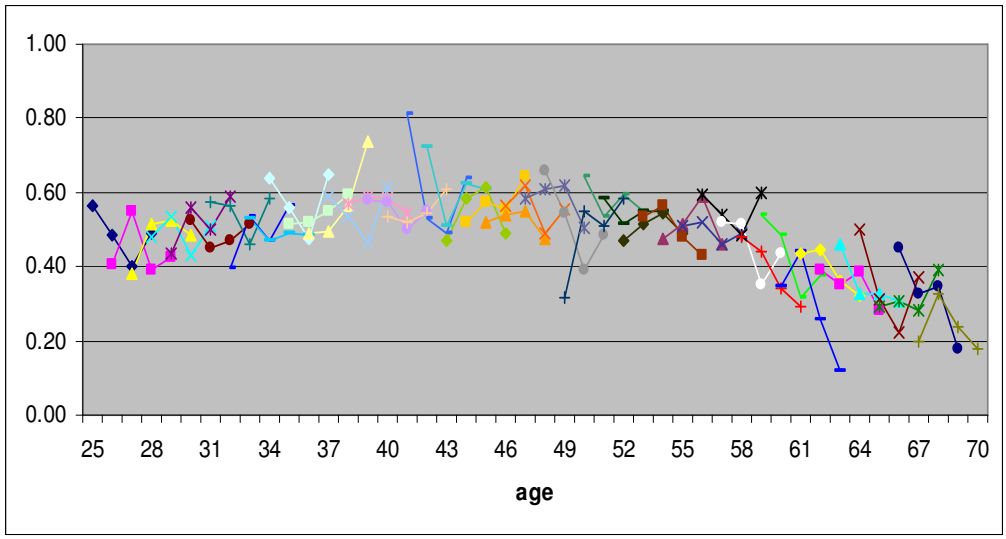

Figure 4.89: Female Labor Force Participation Rate (Rural)

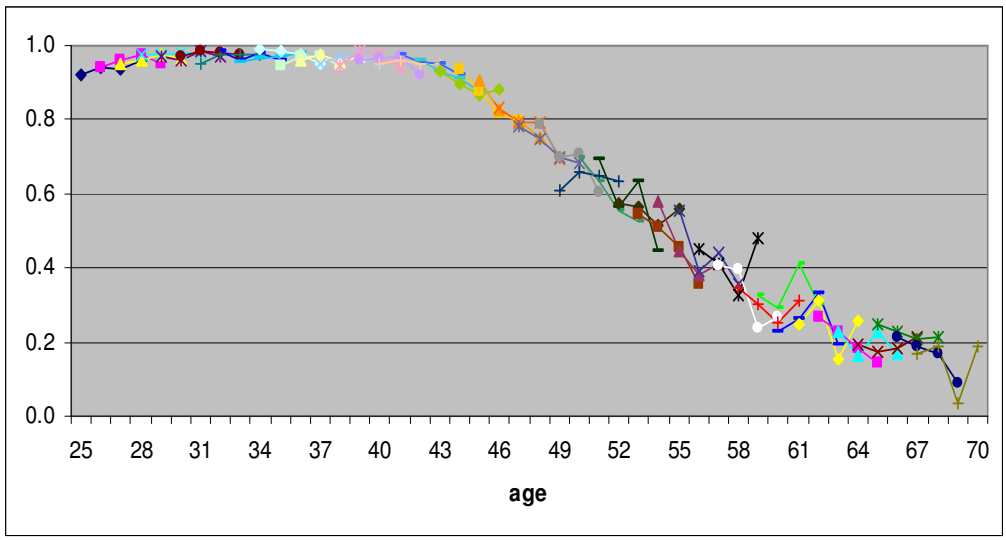

Figure 4.90: Male Labor Force Participation Rate (Urban)

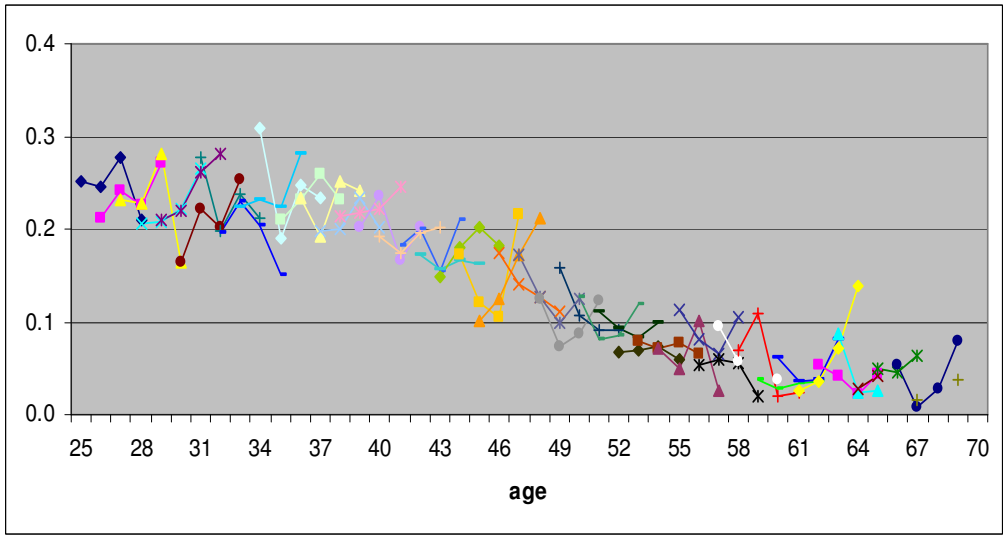

Figure 4.91: Female Labor Force Participation Rate (Urban)

As far as the male data are considered, participation rate is almost unity until the middle of the forties. Thereafter, the decrease in the labor force participation rate for the urban households is sharp and reaches to very low levels. On the other hand, the decrease is slight and remains at high levels for the rural households. This fact could be related to higher participation of urban household heads to the formal sector. By doing so, they are covered by social security arrangements. This issue is

very important, since pension arrangements have very important effects on saving decisions.

4.5.3 Income Analyses

In this section, by employing the cohort techniques, age-income profiles are derived for rural and urban households. While Figure 4.92 gives the median cohort income against the age of the household head for the rural households, Figure 4.93 displays the same profile for urban households.

According to the graphs, median income is higher for the urban households, as expected. While the income profile for urban households presents a pronounced hump, the profile for rural households exhibits a relatively flat pattern. In addition to that, the profile for urban households peaks later. Strong cohort effects are also evident for the urban households, the younger the cohort the more lifetime resources it has which could be due to the real wage growth.

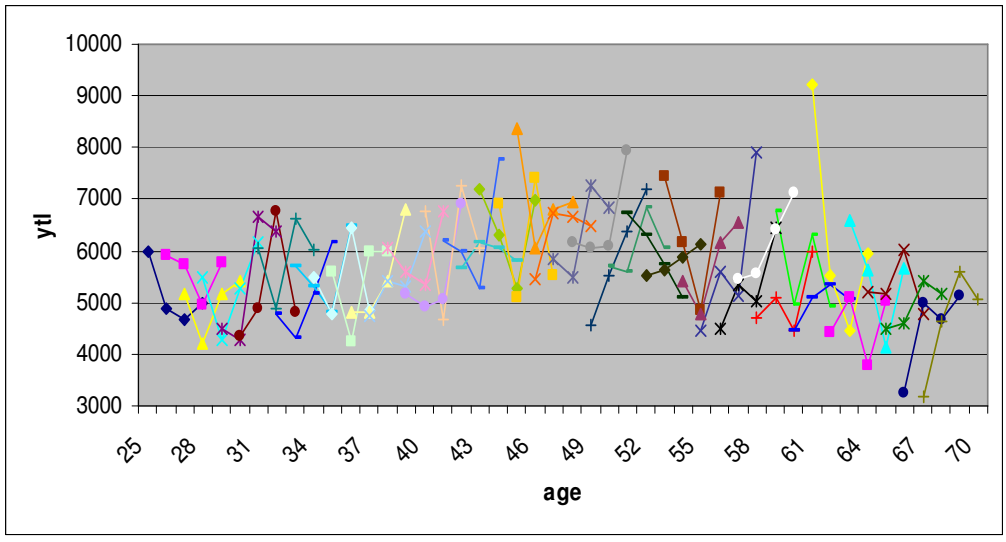

Figure 4.92: Median Income by Cohorts (Rural)

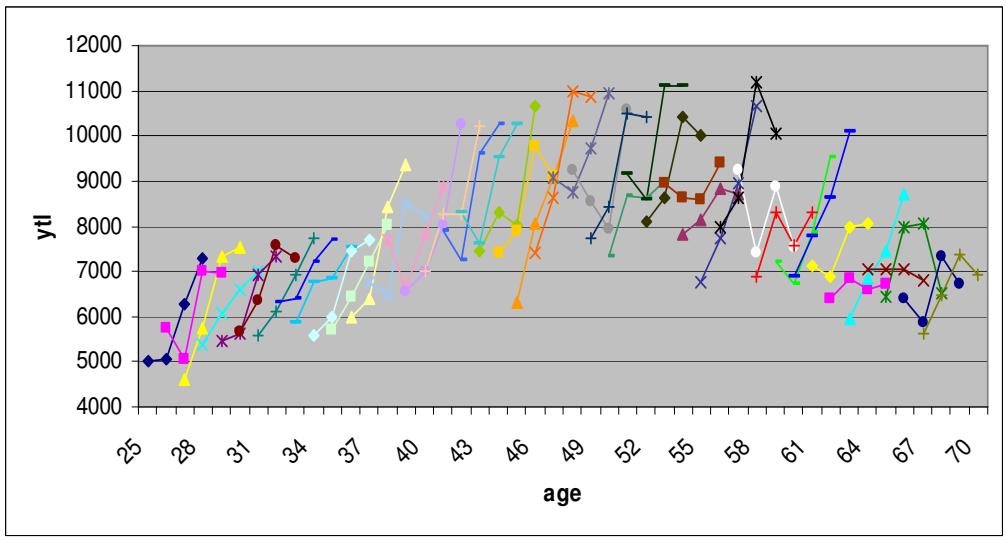

Figure 4.93: Median Income by Cohorts (Urban)

As mentioned above, the number of families living in the same household is higher in rural areas. This fact could be one reason of the relatively flat profile of rural households. Moreover, the differences in the average educational attainment figures could also be a reason for different income profiles. It was found that, while the profile for rural households exhibits a decreasing trend, urban households' profile stays flat until the late fifties. Therefore, the difference between the educational attainment levels of the urban and rural households increases until the middle ages and declines thereafter. In this respect, one can expect the income profile of urban households to increase more compared to that of rural households until the middle-ages as seen from Figure 4.92 and 4.93. Another reason could be the differences in labor supply. For the rural data, the higher labor supply of males and females at the end of the life-cycle and the higher female labor force participation rate at the beginning of the life-cycle could lead to a smoother income profile for rural households relative to their urban counterparts. Finally, the differences in earning opportunities in urban and rural areas can lead to different profiles. While the earnings stay relatively flat over the life-cycle in rural areas, it increases in the middle ages due to promotions and etc. and decreases with retirement and therefore exhibits hump shape in urban areas.

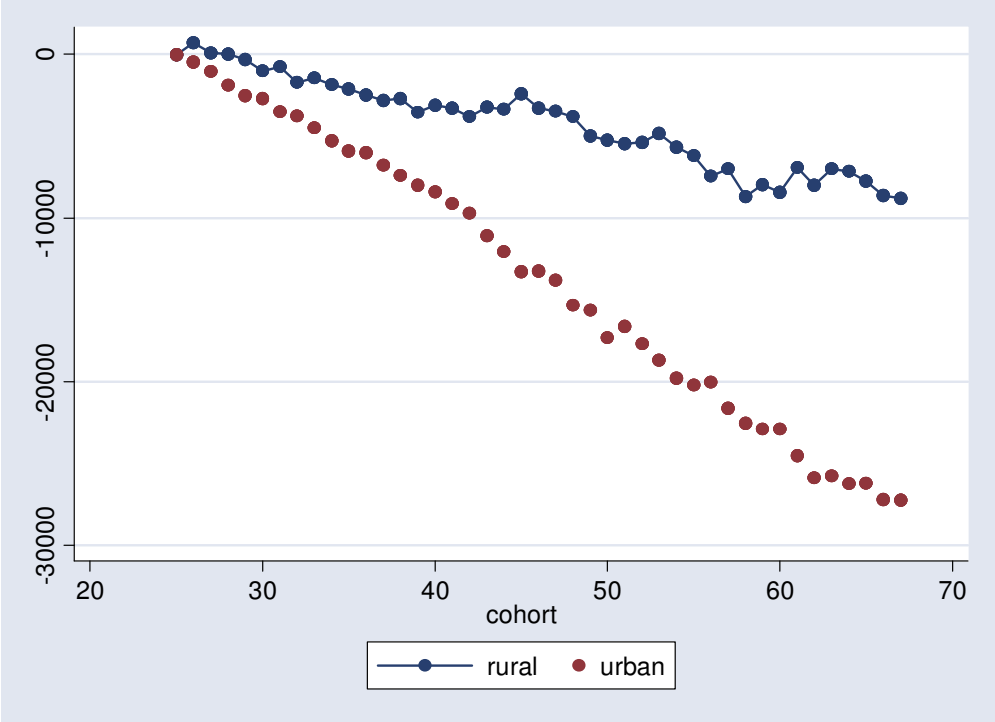

Figure 4.94: Cohort Effects in Income

Age, cohort and time effects are identified by using regression analysis and the results for cohort effects are plotted in Figure 4.94 for both types of households. Both profiles display a decreasing pattern for cohort effects. However, the decrease for urban households is steadier; the younger the household, the higher is its lifetime profile of income. For the rural households, it is observed that the decrease is not steady and even we observe a flat shape for the oldest cohorts.

Figure 4.95 displays the age effects for rural and urban households. Different from the hump shape profiles observed in Figure 4.92 and 4.93, the age profiles of income exhibit somewhat concave shapes[38]. While the increase in age effects is steady and continuous until the end of the life-cycle for the urban households, for the rural households we observe an unsteady pattern with declines at the old ages. Once again since what we deal is not the labor income but the total household

[38] This finding states that, the hump shape profiles come from the cohort effects, not the age effects. Even for the oldest cohorts, we do not observe a decline in income with age (Figure 4.92 and Figure 4.93).

income, the existence of significant pension income could prevent a drop in total income at older ages.

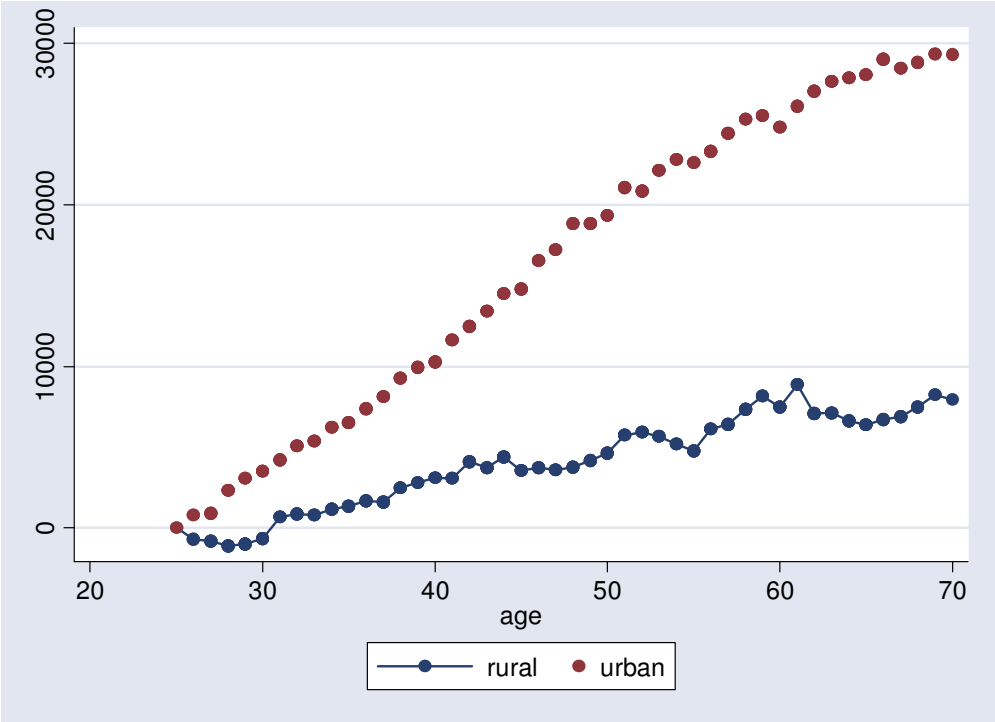

Figure 4.95: Age Effects in Income

Parallel to the previous part, the income analyses are completed with the investigation of year effects. Figure 4.96 plots the year effects for rural households and urban households. The magnitudes of these effects are again found much smaller than cohort and age effects. According to the figures, economy is growing faster than trend from 2003 to 2004 for both types of households; however from 2004 to 2005, while the growth is larger than trend for the rural households, it is smaller for urban households. These findings are also evident from Figure 4.92 and Figure 4.93.

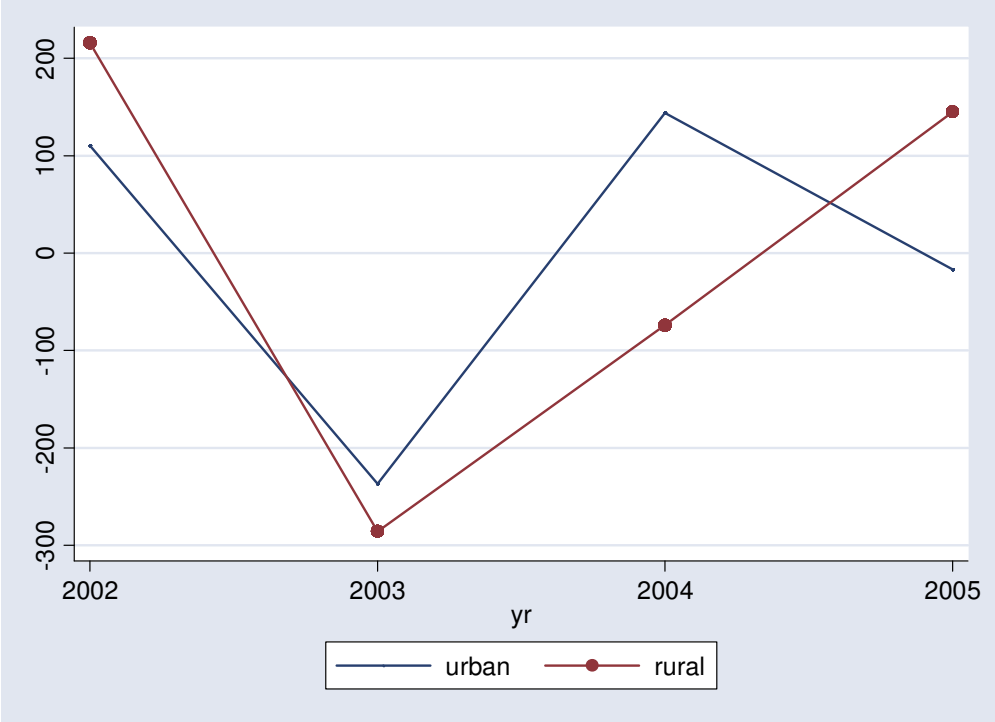

Figure 4.96: Year Effects in Income

4.5.4 Consumption Analyses

Following income, synthetic panel techniques are employed to investigate the consumption of rural and urban households. In Figures 4.97 and 4.98, cohort medians of total consumption against age are plotted for rural households and urban households, respectively. Consumption profiles of both types of households present features similar to their income profiles; whereas the hump shapes of consumption profiles are less pronounced relative to income. Moreover, cohort effects are again significant.

Since the shapes of the profiles are very similar to the income profiles, no further comments will be made regarding these. The merged family structures and the higher labor supply of household members at the two ends of the life-cycle in rural areas seem to make rural households to smooth their consumptions.

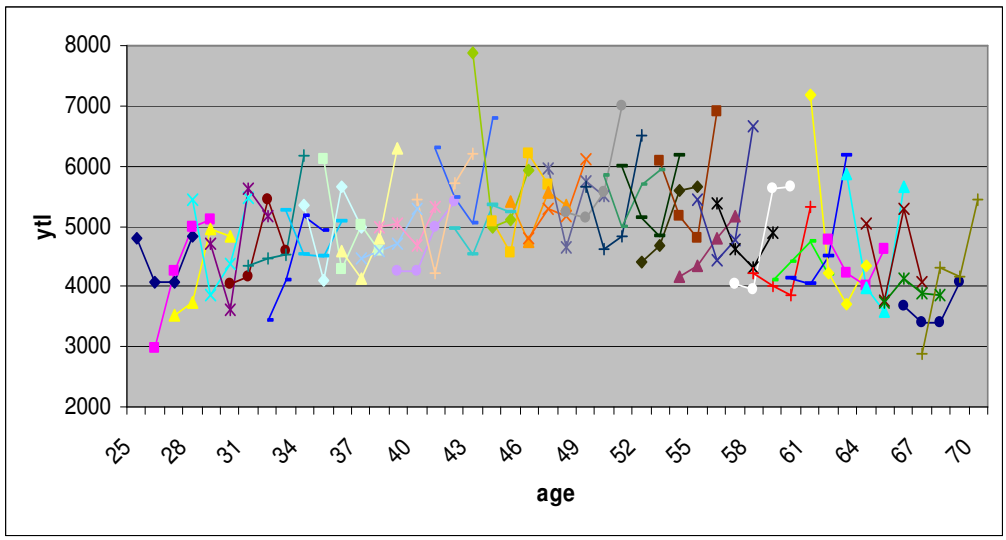

Figure 4.97: Median Consumption by Cohorts (Rural)

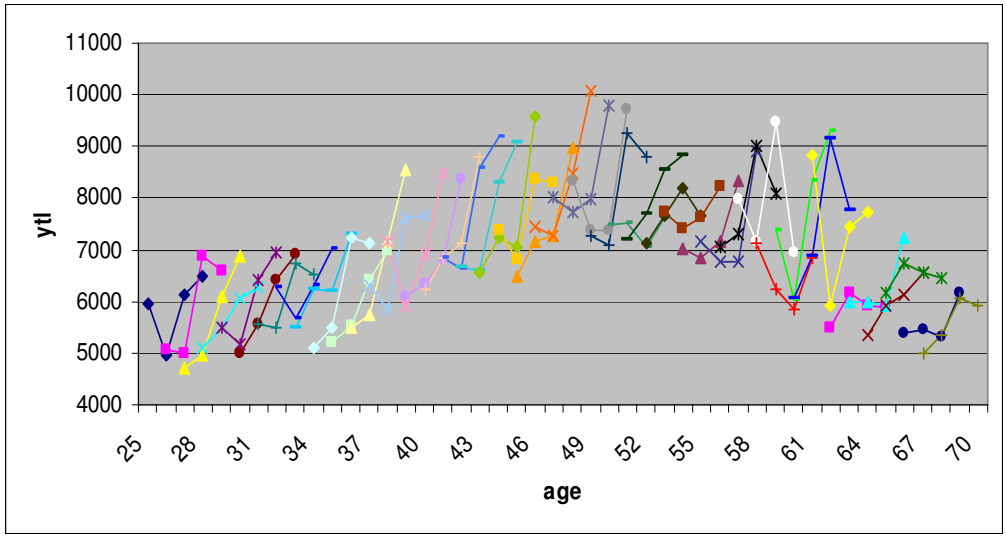

Figure 4.98: Median Consumption by Cohorts (Urban)

As mentioned before, the similarity between the income and consumption profiles could be considered as evidence against the life-cycle theory. However, what we deal in the above figures is the total household consumption, not the individual consumption. It was shown that the household sizes which affect the consumption have similar profiles to consumption. Therefore, the hump shapes of consumption profiles may be due to the hump shapes of household size profiles. In this respect, to test the life-cycle model in a more reliable way, per adult-equivalent

consumption profiles are plotted for both types of households (Figure 4.99 and Figure 4.100). From these figures it is evident that, these life-cycle profiles are smoother, which could be interpreted in favor of the life-cycle model.

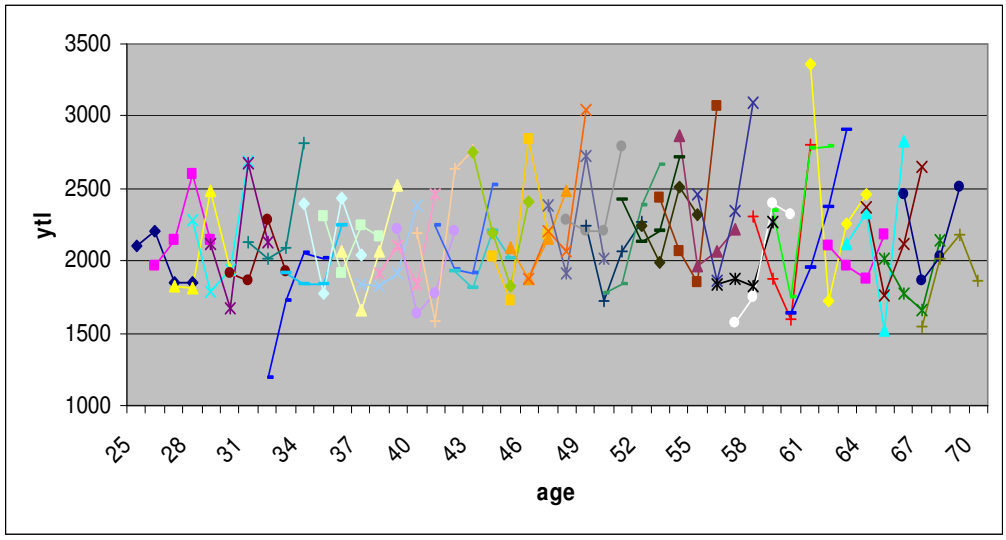

Figure 4.99: Median Adult-Equivalent Consumption by Cohorts (Rural)

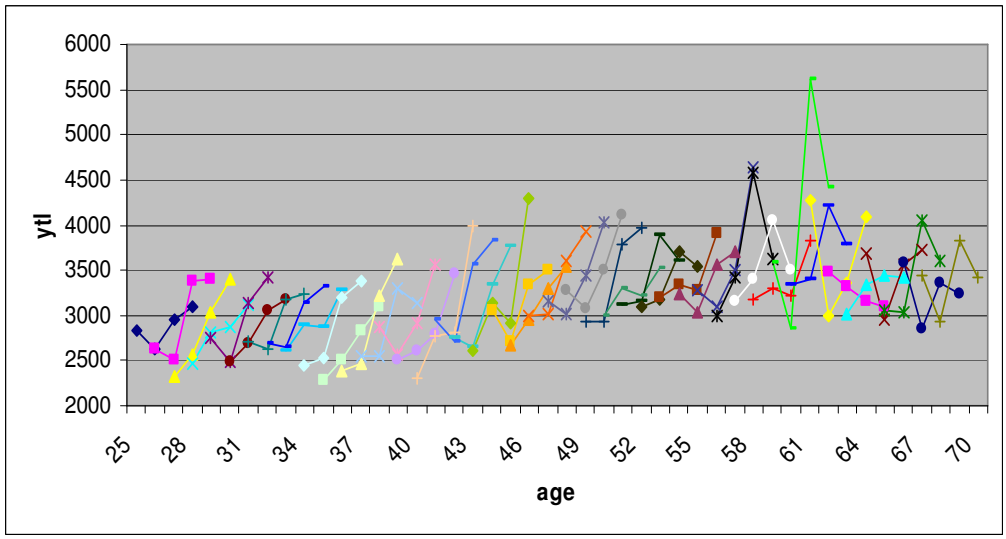

Figure 4.100: Median Adult-Equivalent Consumption by Cohorts (Urban)

Figure 4.101 shows the cohort effects as a function of cohort age (age of the household head in 2002) for rural and urban households. Similar to income, cohort

effects in consumption are found to be decreasing steadily with age in 2002 for the urban households. For rural households, the profile also exhibits a declining trend, but the decrease is not as strong as that for urban households.

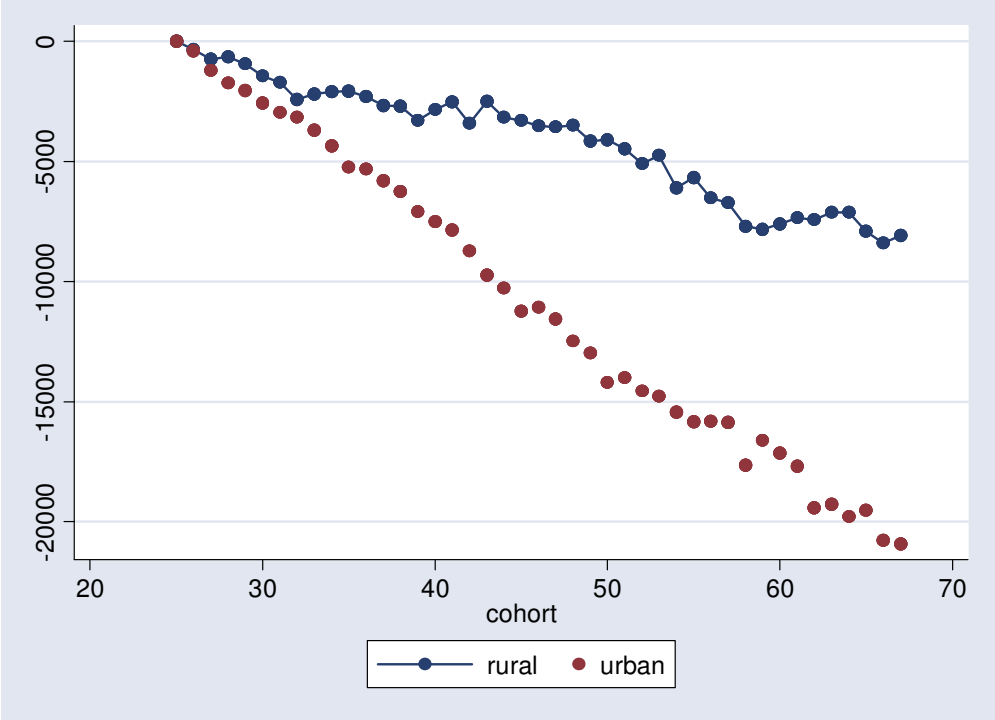

Figure 4.101: Cohort Effects in Median Consumption

The age effects for both types of households are plotted in Figure 4.102. As can be seen from the figure, for both profiles, shape is quite different than the profiles given in Figure 4.97 and Figure 4.98. When we compare these figures, it could be said that the hump shapes observed in Figure 4.97 and Figure 4.98 are due to the cohort effects in consumption. For the rural data, consumption profile is increases unsteadily with age until the age 60, and then exhibits a flat pattern. An increasing pattern (this time steadily) in consumption is observed for the urban households as well, however the growth rate of consumption at older ages are lower which makes the age profile concave.

As mentioned before, the reason behind the increasing age profiles of consumption for both types of households could be the increasing age profiles of income. In addition, high real interest rate observed in Turkey that could make households to postpone their consumptions until late in life. Selectivity observed in data and the existence of uncertainty combined with precautionary saving motives could be other reasons. The relatively flat household size profiles after age sixties and lower consumption needs after retirement could explain the decline in growth of consumption for the old ages.

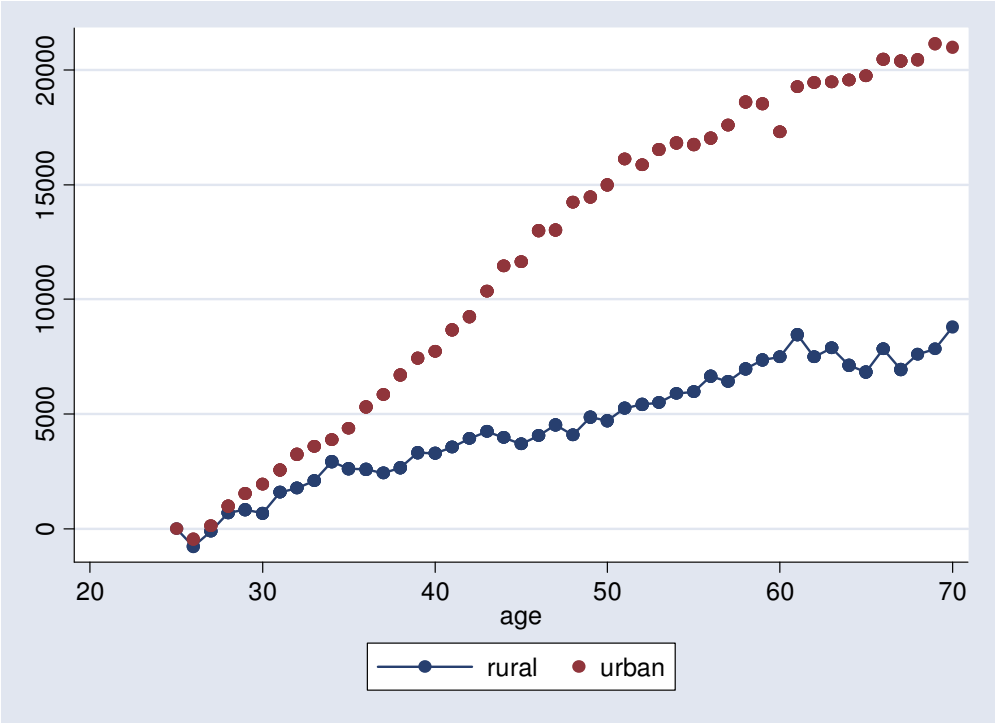

Figure 4.102: Age Effects in Median Consumption

Figure 4.103 presents the year effects for both types of households. While the consumption growth is higher for the urban households from 2003 to 2004, it is higher for the rural households between the years 2004 and 2005.

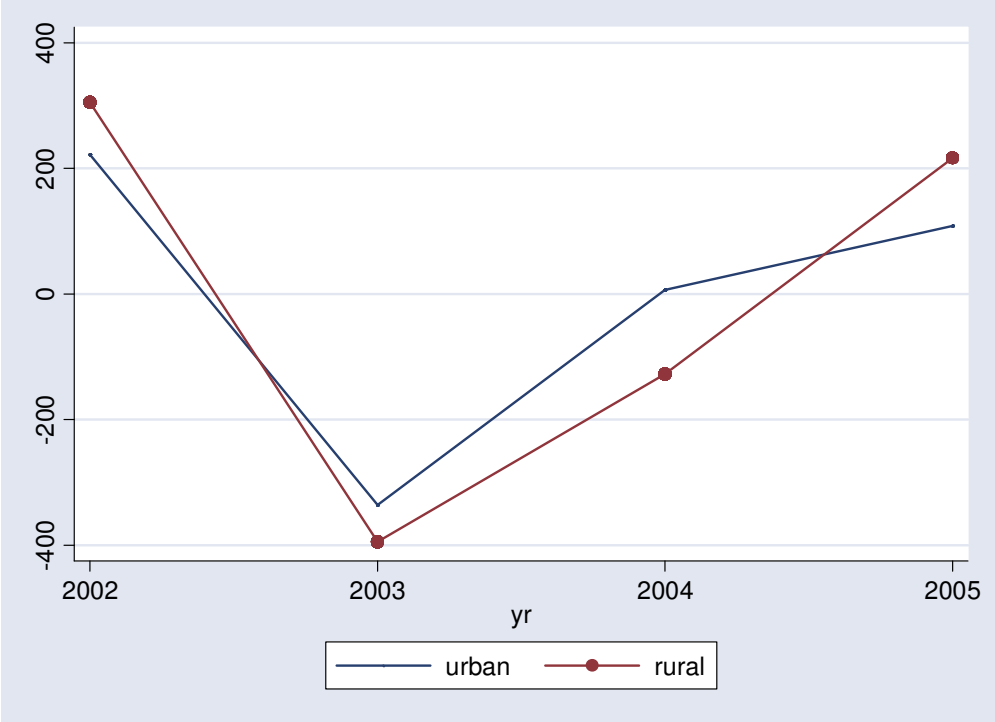

Figure 4.103: Year Effects in Median Consumption

4.5.5 Savings

In this section, the savings of rural and urban households are analyzed. In this respect, I first plot the cell medians against the age of the household head for rural (Figure 4.104) and urban households (Figure 4.105). Noisiness in the rural data is evident from the figure. Saving displays a flat profile for this group. On the other hand, the saving profile of urban households increases until the middle of fifties and stays flat thereafter. The higher growth rate of income (Figure 4.12) relative to consumption (Figure 4.20) in the first part of the life-cycle leads to an increasing saving profile until the middle-ages for urban households.

The positive and high savings for young and old ages for both types of households contradicts the life-cycle model. As mentioned before, the possible reasons of this high savings at young ages could be liquidity constraints and precautionary savings motive, and at old ages health risk, lifetime uncertainty and bequest motive.

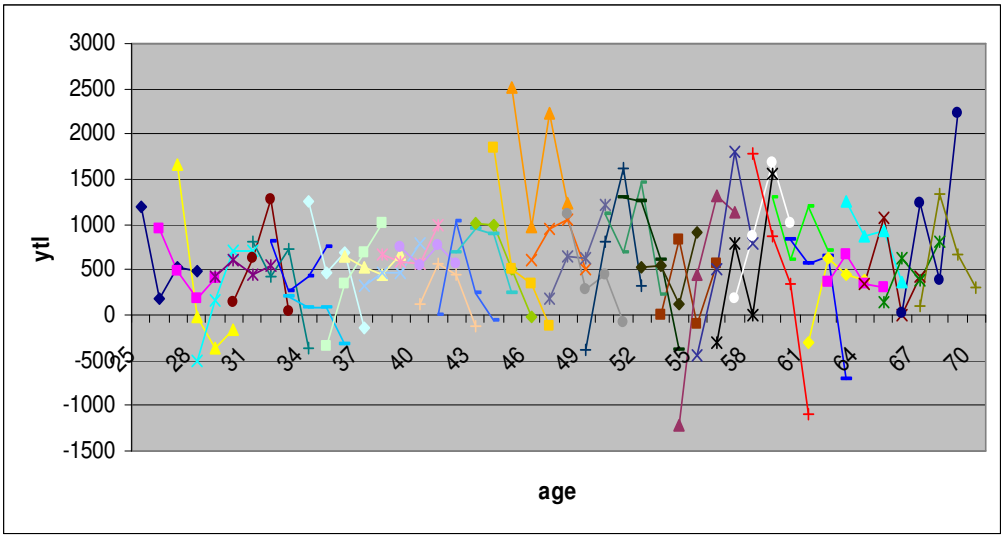

Figure 4.104: Median Saving by Cohorts (Rural)

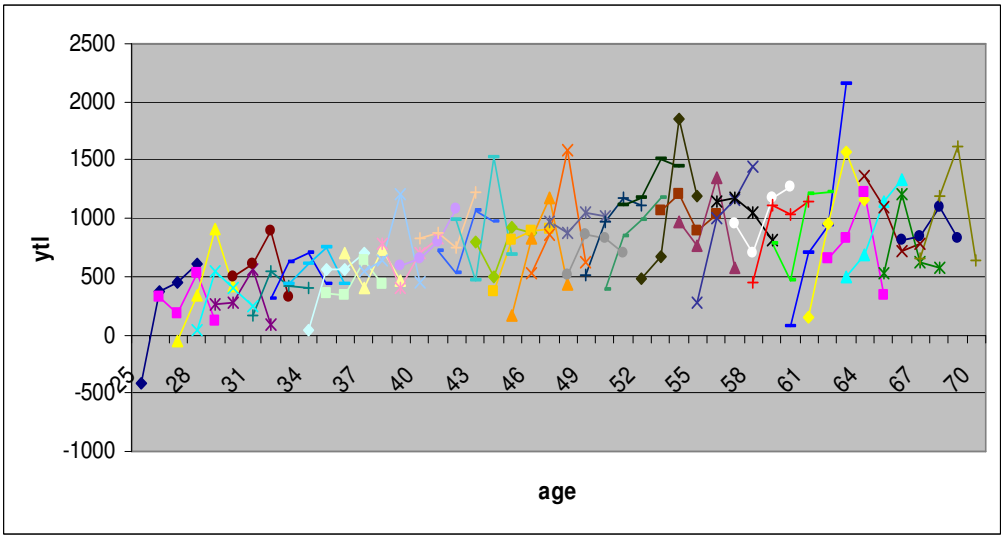

Figure 4.105: Median Saving by Cohorts (Urban)

In what follows, I once again decompose the age, cohort and year effects. In Figure 4.106 the coefficients of cohort dummies are plotted for rural and urban households. At this point, it should be noted that the coefficients of middle aged cohort dummies in rural household regression and the coefficients up to cohort's age 40 in urban household regressions are found insignificant.

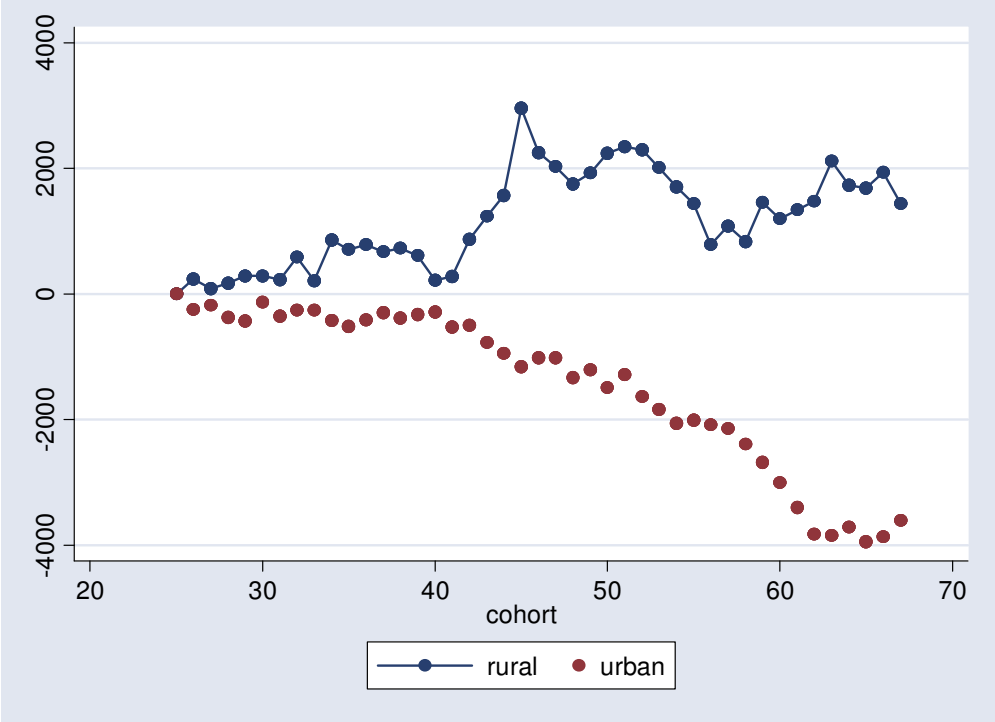

Figure 4.106: Cohort Effects in Median Saving

According to the figure, for the rural households, savings are increasing with the age of the household at year 2002[39]. In other words, older cohorts save more relative to younger ones in the rural areas. However, the urban data exhibits a completely different pattern. The cohort effects stay flat for the cohorts up to age 40 and decrease thereafter which means, for the cohorts born before 1962, younger cohorts save more.

The age effects in savings are given in Figure 4.107. In the rural household regression, the coefficients are found statistically insignificant for the young and the old age dummies. For the rural households, savings exhibit a decreasing trend at the middle-ages. On the other hand, savings increase at an increasing rate until sixties and stay stable thereafter for the urban households. While saving is increasing with age in urban areas, just the opposite is true for the rural areas.

[39] Although the cohort effects increase sharply after age 40 and then declines, the general trend is an increasing one.

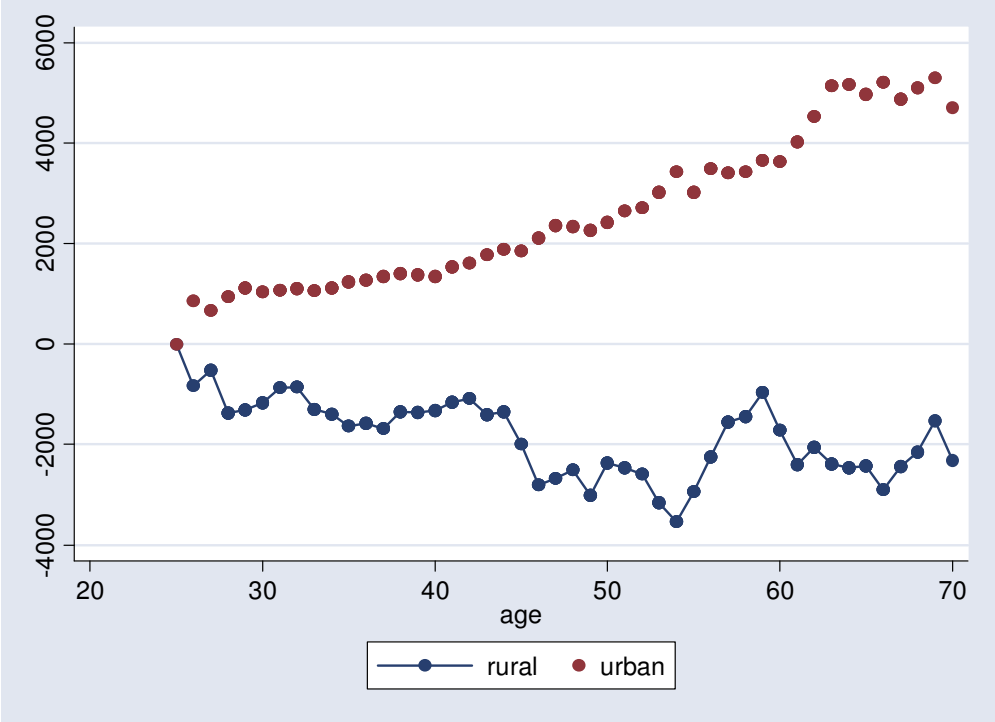

Figure 4.107: Age Effects in Median Saving

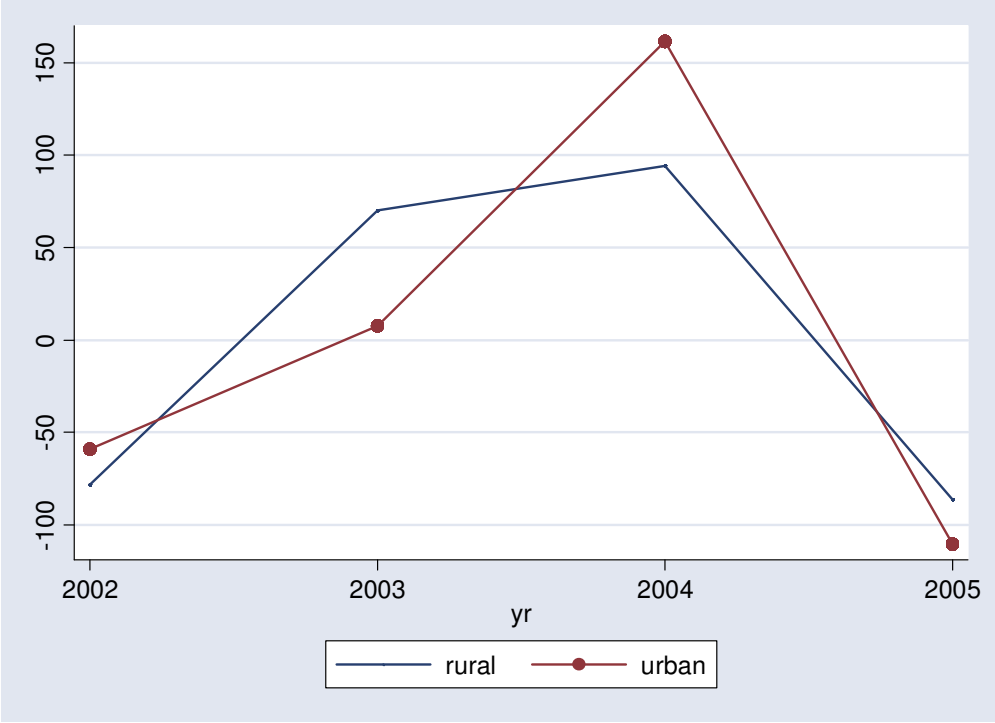

Figure 4.108: Year Effects in Median Saving

Lastly, year effects in savings which are plotted in Figure 4.108 are analyzed. Savings move parallel for both types of households. It grows more than trend for the years 2002-2004, and declines from 2004 to 2005. While the growth rate is higher for rural households from 2002 to 2003, it is higher for urban households from 2003 to 2004. The comparisons of growth rates of consumption and income explain the shapes of the year effects in savings for both types of households as mentioned in section 4.3.3.

4.5.6 Saving Rate

Following saving, saving rate is investigated by plotting the median saving rate of the cohorts against the age of the household head for both types of households (Figure 4.109 and Figure 4.110).

According to the figures, while a slightly increasing profile is observed for the rural households, increasing is more explicit for urban households. The saving rates of rural households are higher than the urban households in spite of their lower income[40]. One possible reason of this higher saving rate could be the fact that, the share of the people who do not participate to any social security system is high in rural areas. Higher uncertainty regarding income and the need of saving to finance the expenditures during retirement could increase the saving rate. The lower consumption needs of the households in rural areas could also be another reason. Increasing saving profiles for both types of households are inconsistent with the life-cycle model. Once again, this situation could be attributed to the lower dependency ratio, existence of health risk, lifetime uncertainty, bequest motive and selection bias.

[40] At first glance, the higher saving rates of rural households are not observed from the figures. However, when the scale differences between the two figures are considered, this finding is evident.

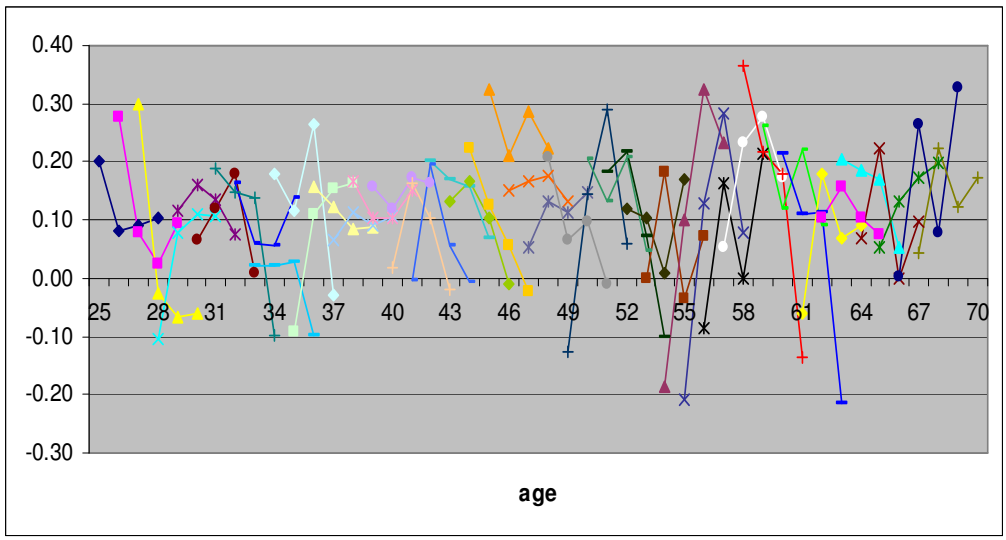

Figure 4.109: Median Saving Rates by Cohorts (Rural)

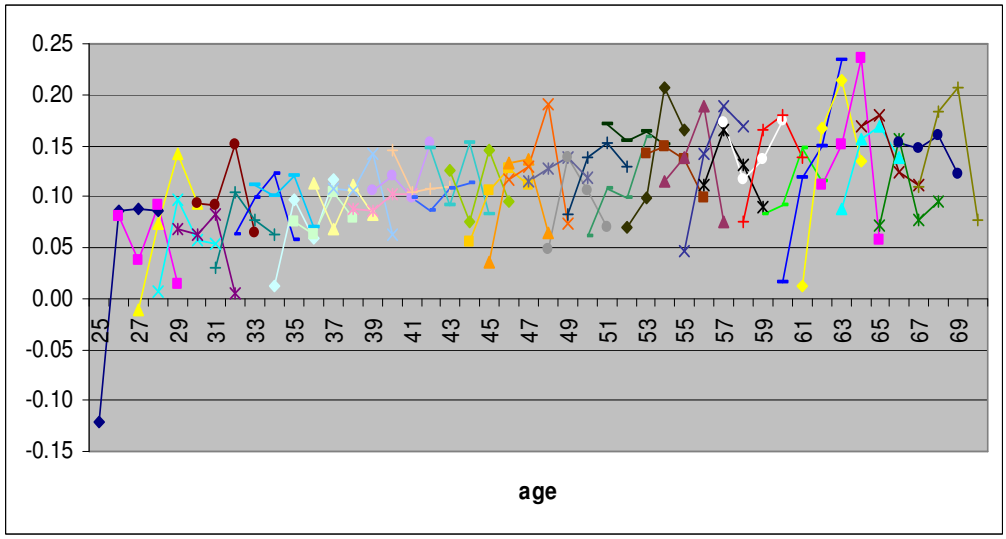

Figure 4.110: Median Saving Rates by Cohorts (Urban)

The cohort effects for rural and urban households are given in Figure 4.111. For both rural and urban households, first few cohort coefficients are found statistically insignificant. According to the figures, while the cohorts that born later (younger) are saving less relative to older cohorts in rural areas, just the opposite is true for the urban households. The real wage growth, the change in the social security system and increasing uncertainty regarding the jobs could be responsible for the

decreasing cohort effects (higher savings of younger cohorts) in urban household data. On the other hand, the lower dependency ratio could lead to an increasing cohort effect profile for rural households.

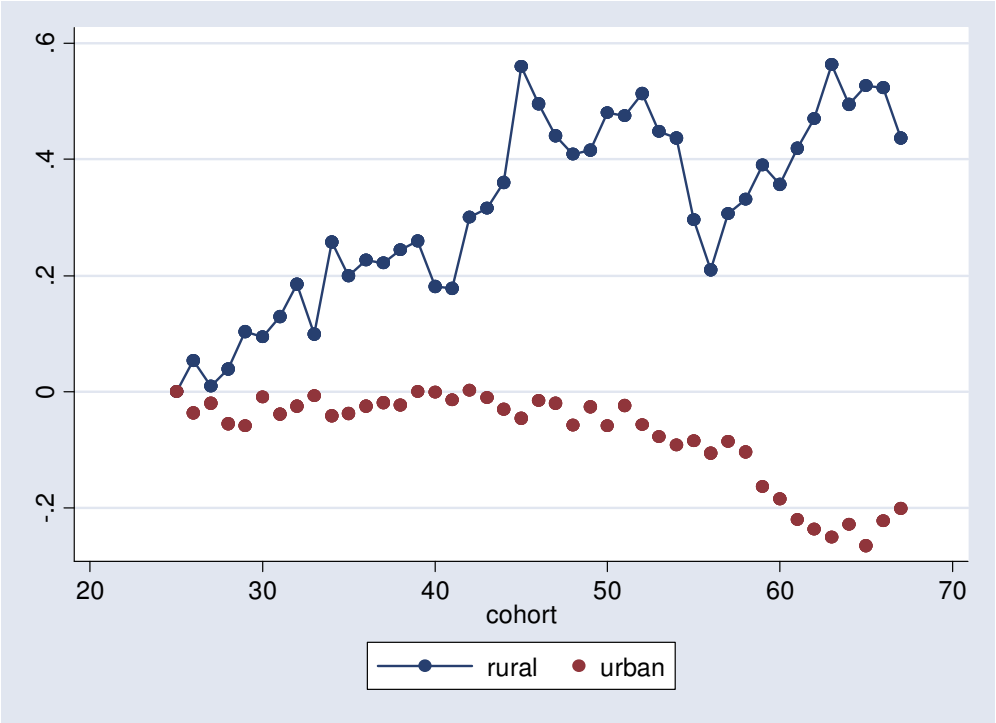

Figure 4.111: Cohort Effects in Median Saving Rate

Figure 4.112 presents the age effects for the rural and urban households. According to the figure, saving decreases with age until the middle of fifties, thereafter it exhibits both increases and decreases. The urban data exhibits a very different profile for age effects. Saving rate profile is found to be flat until the beginning of fifties and then increases until age 61 and decreases thereafter.

For the rural households, high saving rate in early years of life-cycle, which contradicts the life-cycle theory, could be due to precautionary motive since there are high income uncertainties for the uncovered agricultural workers. On the other hand, high saving rates observed at the end of the life-cycle in the urban data, which again contradict the life-cycle theory, could be due to the low dependency ratio, bequest motive, health risk and lifetime uncertainty.

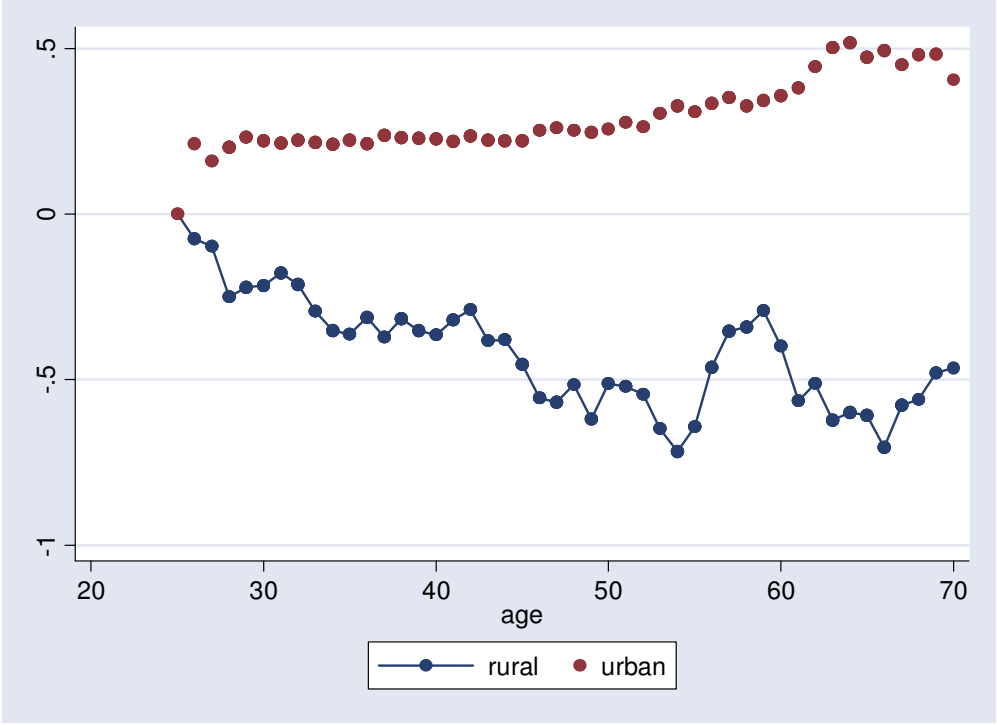

Figure 4.112: Age Effects in Median Saving Rate

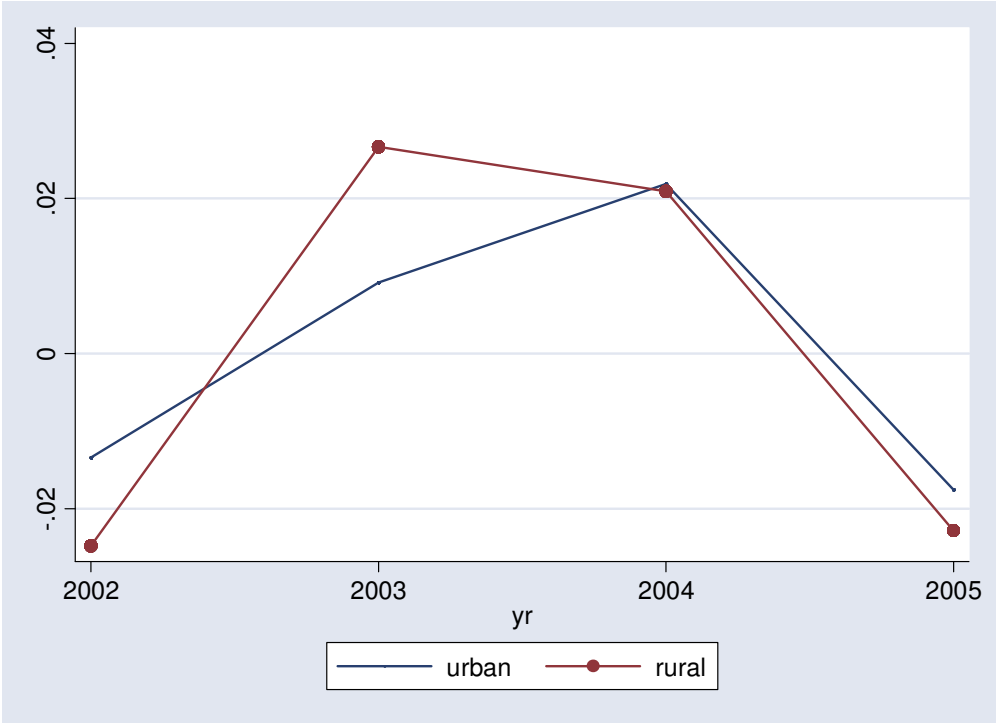

Figure 4.113: Year Effects in Median Saving Rate

The year effects in saving rate for both types of households are given in Figure 4.113. An important point to mention is the difference in the change of the saving rates for the two types of households between 2003 and 2004. While a decline is observed between those years for the rural households, saving rate is found to be increasing for the urban households. Saving rates decline for both types of households from 2004 to 2005 which is also evident from Figure 4.109 and Figure 4.110 as the decline for almost all cohorts at last survey year.

4.5.7 Saving Rate with Durable, Health and Education Expenditures

Finally, I have analyzed the wider definition of saving rate which considers durables, education and health as saving. The median saving rates of each cohort against the age of the household head for both types of households are plotted in Figure 4.114 and Figure 4.115.

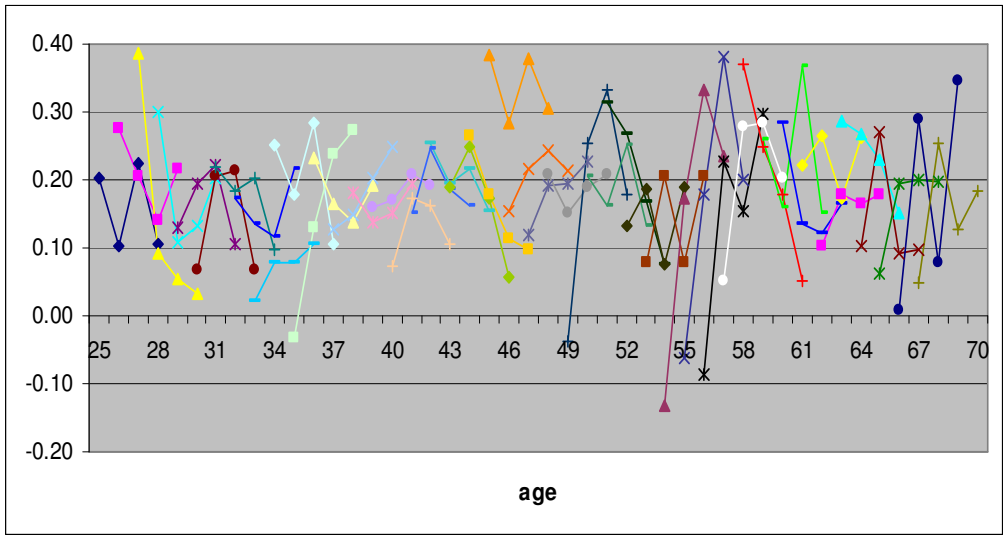

Figure 4.114: Median Saving Rates by Cohorts (Rural)

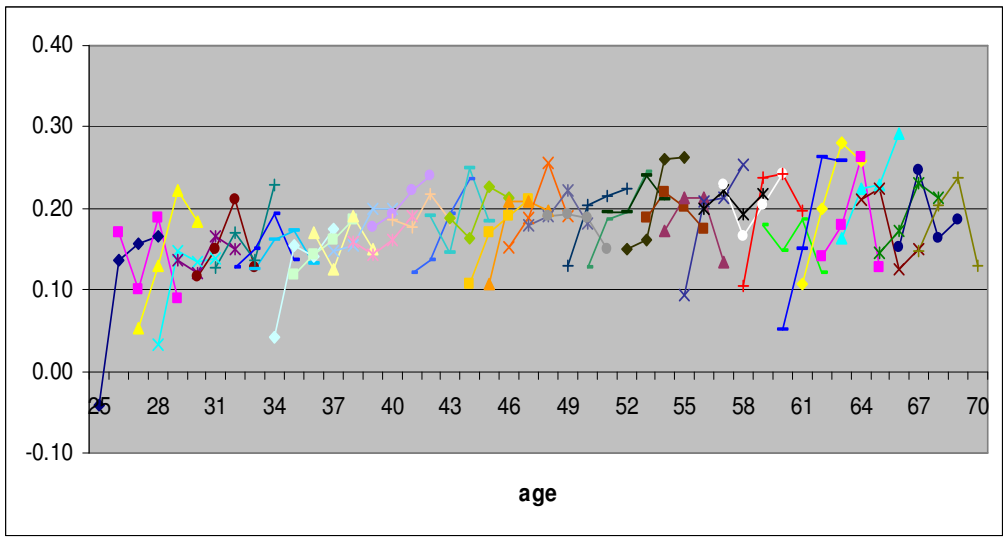

Figure 4.115: Median Saving Rates by Cohorts (Urban)

The difference between the profiles of rural and urban households are similar to the previous definition of saving rate, therefore no additional comment will be made. On the other hand, the saving rate profile for the wider definition is flatter relative to previous definition for both types of households. These flatter profiles are mainly due to the higher purchasing of durables by the younger cohorts that makes the saving rate higher in the early part of the life-cycle. As expected, the saving rates of both types of households with this new definition are higher than the previous definition.

Figure 4.116 displays the cohort effects for rural and urban households. Before discussing the effects, it should be noted that, 19 cohort and 22 age dummies are found insignificant at the middle-ages for rural households. According to the figures, saving rate fluctuates around a higher level for the younger cohorts relative to older cohorts for rural households. Whereas, for the urban households, cohort effects in saving rate are found to decline steadily with the age in 2002, in other words, the younger the household, the higher is its saving rate. When we compare those profiles with the ones those belong to the previous definition of the savings, it could be said that, the younger cohorts save more with this wider definition of saving rate for both types of households. As mentioned above, the reason behind

this could be the higher tendency of younger cohorts to buy durables which is evident from Figure 4.81.

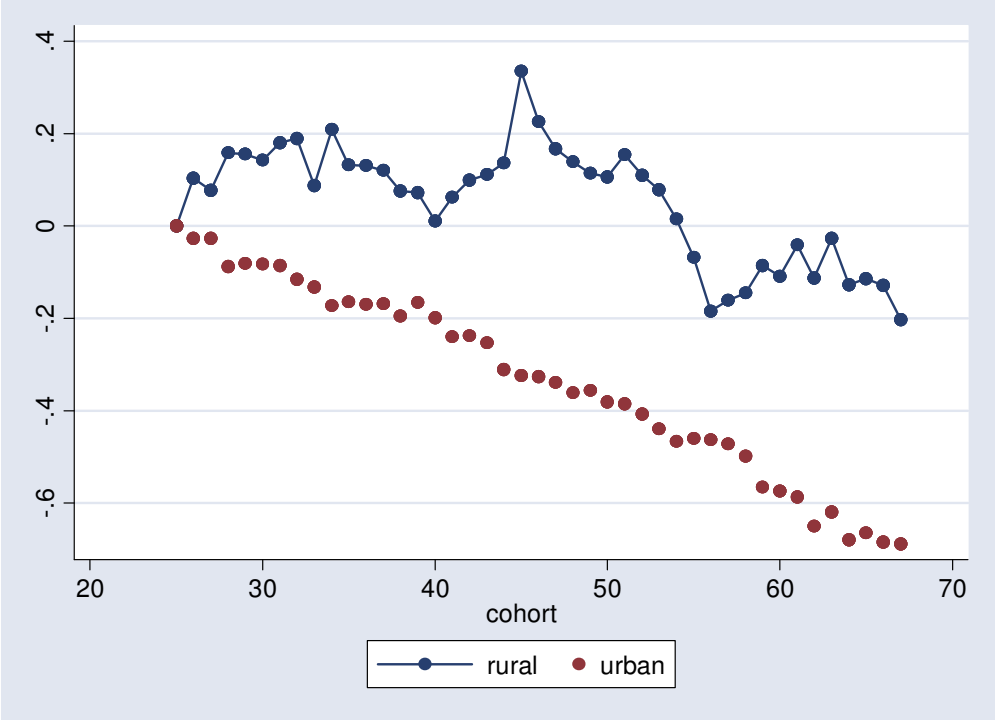

Figure 4.116: Cohort Effects in Median Saving Rate

As usual, age effects are analyzed following the cohort effects (Figure 4.117). While the rural household data does not exhibit a stable pattern, saving rate is found to be steadily increasing with age for the urban data. The high saving rate at the end of the life-cycle could once again be attributed to the existence of low dependency ratio, health risk, lifetime uncertainty, bequest motive. For the urban households, the flat age profile of previous saving rate definition observed in the first part of the life-cycle are now found to be increasing with age with this new definition, most probably again due to durable purchases of the young.

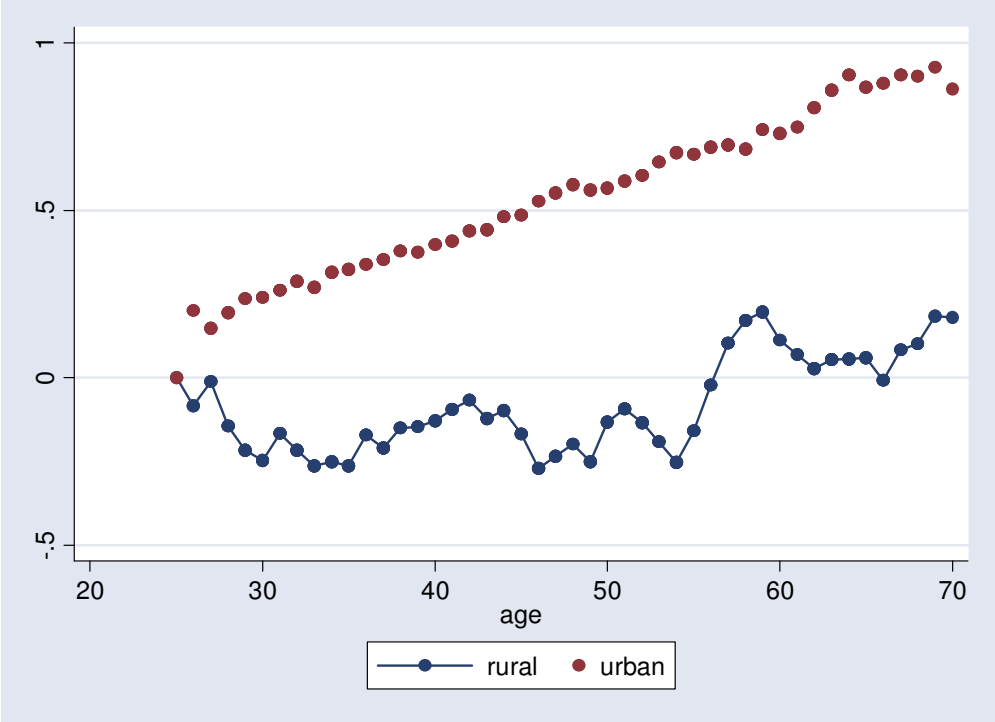

Figure 4.118: Age Effects in Median Saving Rate

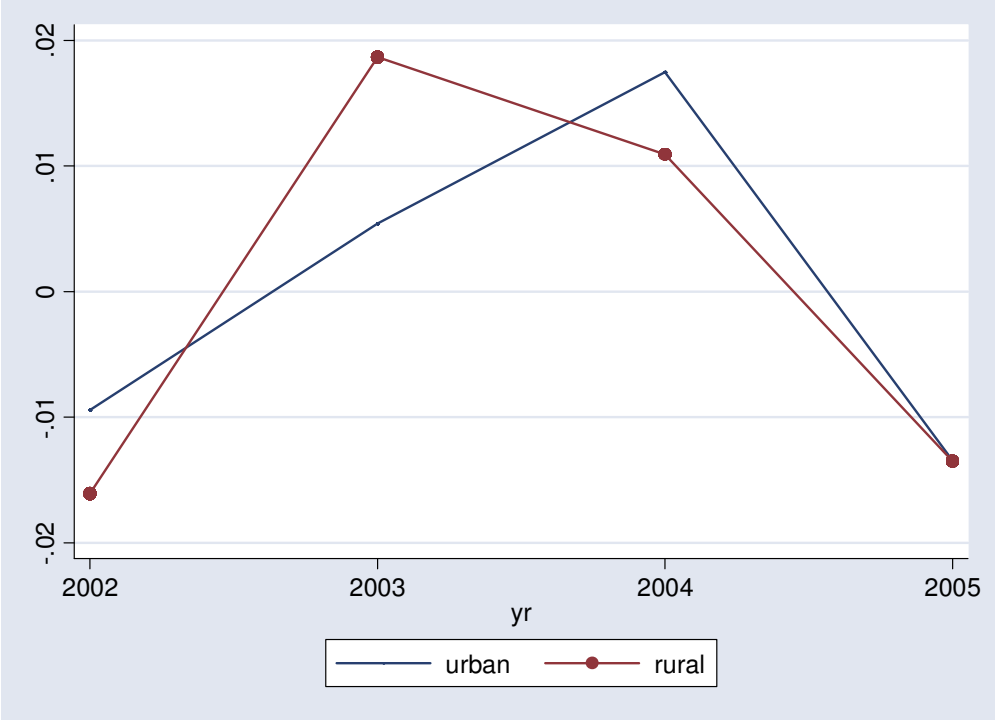

Figure 4.119: Year Effects in Median Saving Rate

The main difference between the rural and urban households regarding the year effects is observed between the years 2003 and 2004 (Figure 4.51 and Figure 4.52). While the saving rate grows more than trend for urban households, it grows less than trend for rural households between these years. Moreover, the two definitions of saving rate are found to move parallel in terms of year effects for each type of households.

4.6 Analyses for Formal and Informal Households

Income, consumption and savings of the households that are working in formal sector and therefore covered by social security system could be very different from the ones that are working in informal sector and do not covered by social security system. For example, we expect the uncovered households to save more than the covered households in order to finance the expenditures during retirement. In addition to that, we expect higher income uncertainty in the informal sector to force the households to save more as mentioned in the precautionary saving literature. In this respect, this part of the study compares the income, consumption and savings for these two groups.

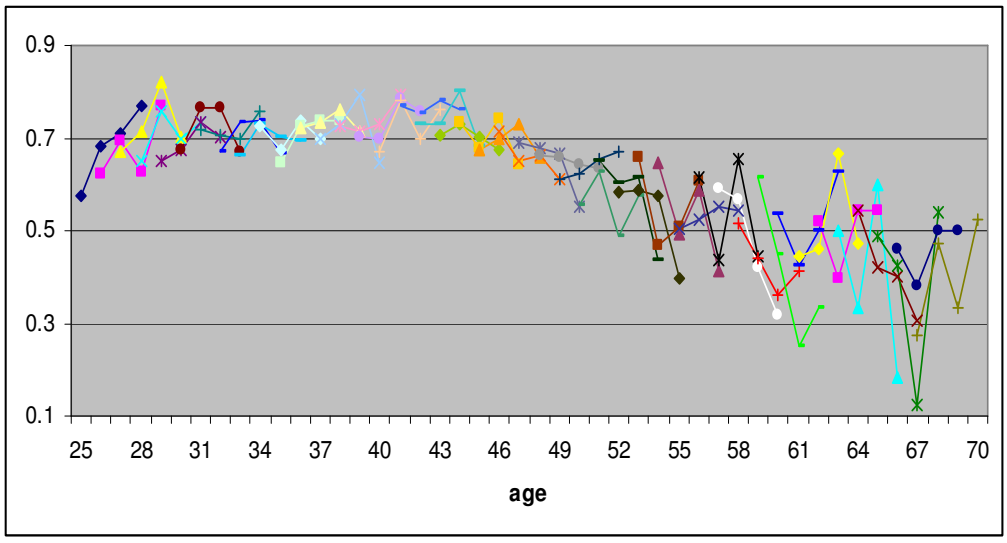

Figure 4.120: Share of Formal Households by Cohort

As mentioned in the data chapter, while the definition of the formal household captures the households with at least one individual working in informal sector, the informal households consist only of individuals working in the informal sector. Figure 4.120 presents the share of the formal households. Until retirement, the share of formal households stays relatively flat around 70% level. Thereafter it decreases, however the speed of the decline is slow. Even after age sixty, the share of formal households in the sample is above 30%. This high share at old ages could be due to the existence of old people that prefer to work. Moreover, the old parents living with their working children could also be another reason.

4.6.1 Income Analyses

As in the previous parts, the analyses begin with the investigation of income profiles. In the survey, the participants asked about their net labor income. However, although the before tax labor income is equal to net income for informal sector workers, it is not true for formal sector workers. This fact is important while calculating the savings since the social security deductions are nothing but the savings for retirement. In this respect, for a better comparison of incomes, the social security deductions are calculated for workers in the formal sector and added to their net income. The calculations are carried out separately for public and private sector employees. The cohort medians of total household income for informal households are presented in Figure 4.121 and the adjusted total household incomes for formal households are presented in Figure 4.122.

The first thing to mention regarding the graphs is the significant difference between the incomes of two groups. For all the age groups, the household income of formal households is higher than the informal households. Income profile of informal households increases until the middle of the fifties and decreases there after slightly which is expected since they are mostly blue-collar workers. Moreover, strong cohort effects are evident for this group; the younger cohorts are better-off. For the

formal households, median income increases until age sixty and slightly decreases thereafter. No cohort effects are evident for this group.

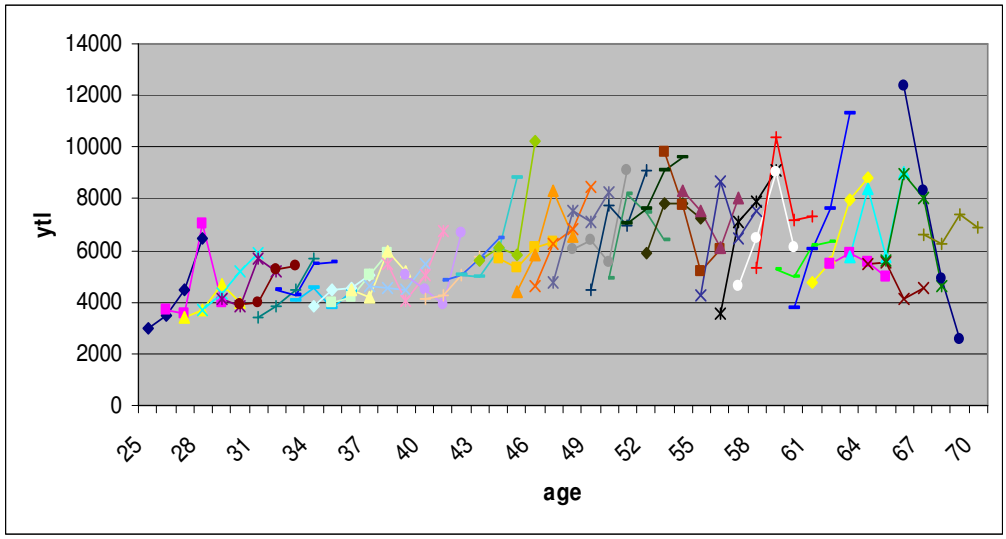

Figure 4.121: Median Income by Cohorts (Informal)

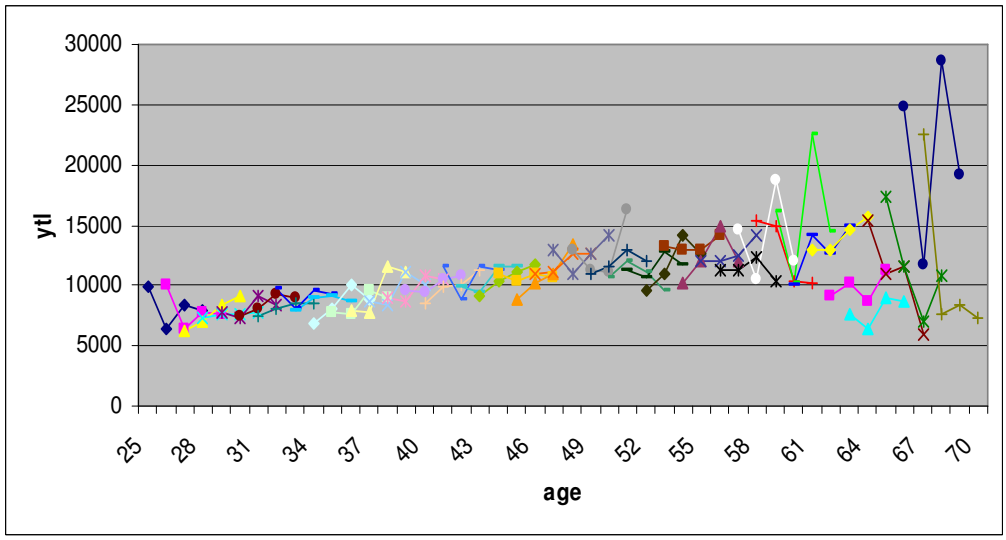

Figure 4.122: Median Income by Cohorts (Formal)

4.6.2 Consumption Analyses

This section analyses the total consumption expenditures of the formal and informal households by plotting cohort medians. According to the figures, formal households

consume more than the formal households as expected. For the informal households, the shape of the consumption profile is similar to that of income; however consumption profile peaks at earlier ages (Figure 4.123). For the formal households, the similarity between income and consumption profile is also evident, a slightly hump shape is observed. Once again, while there are strong cohort effects for the informal households, we do not observe any significant cohort effects for the formal households.

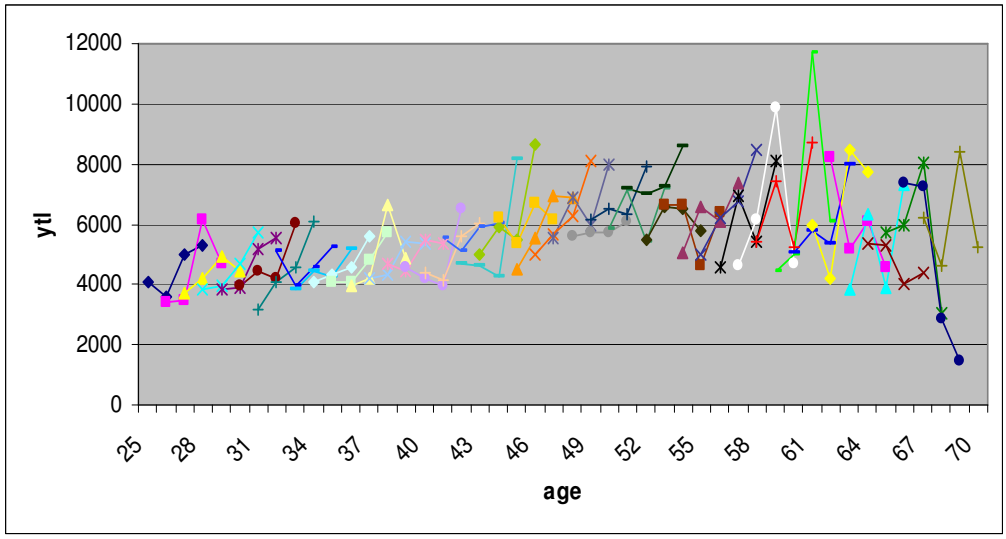

Figure 4.123: Median Consumption by Cohorts (Informal)

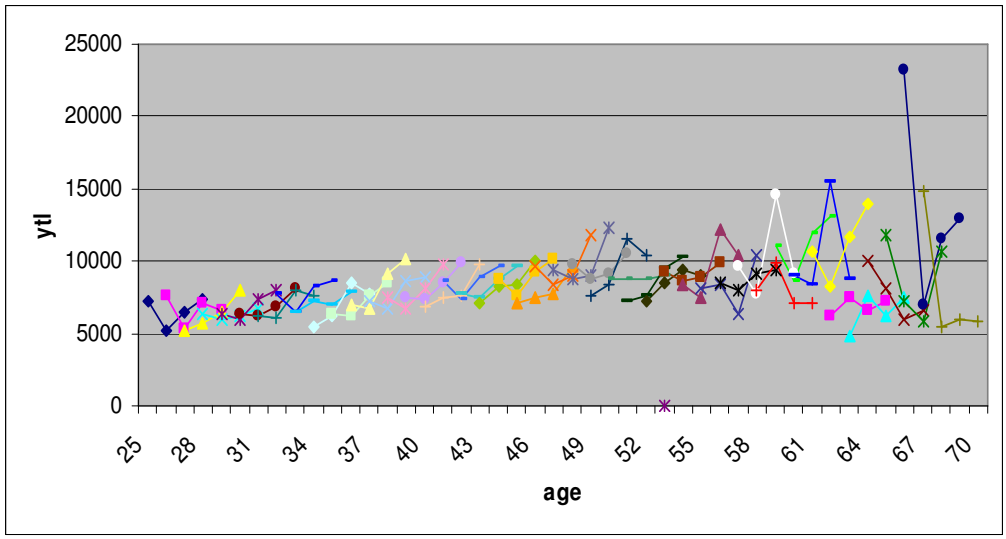

Figure 4.124: Median Consumption by Cohorts (Formal)

4.6.3 Savings

Following consumption, synthetic panel techniques are employed to investigate the savings of formal and informal households. In Figures 4.125 and 4.126, cohort medians of total saving against age are plotted for informal households and formal households, respectively.

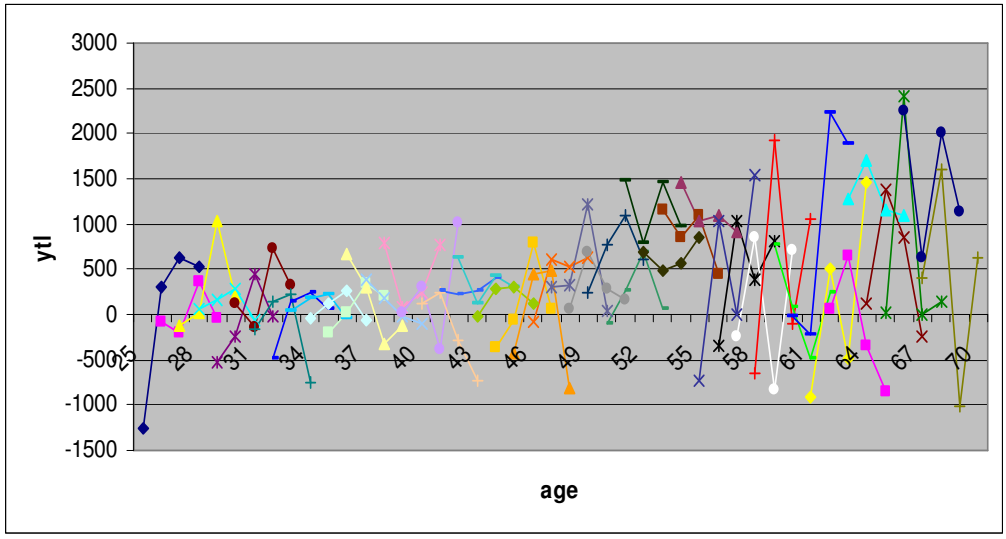

Figure 4.125: Median Savings by Cohorts (Informal)

The savings of informal households are found to be slightly increasing with age. For the formal households, saving profile is found to exhibit a significantly increasing trend. As mentioned before, the possible reasons of these high savings could be lower dependency ratio, health risk, lifetime uncertainty, bequest motive and selection bias[41]. As in income and consumption analyses, savings are found to be higher for the formal group[42].

[41] Once again, the noisiness of the data at the old ages could be an indicator of selection bias.

[42] Since the incomes of formal households are calculated by adding the social security deductions to the labor income, savings of that group includes these deductions.

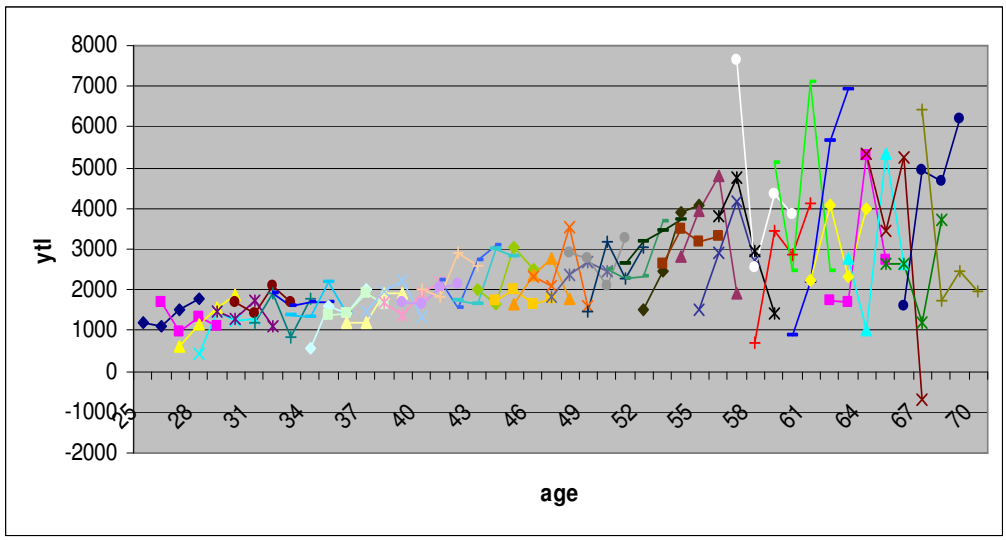

Figure 4.126: Median Savings by Cohorts (Formal)

4.6.4 Saving Rate

The saving rates of the both types of households are investigated by plotting the cohort medians against the age of the household head (Figure 4.127 and Figure 4.128).

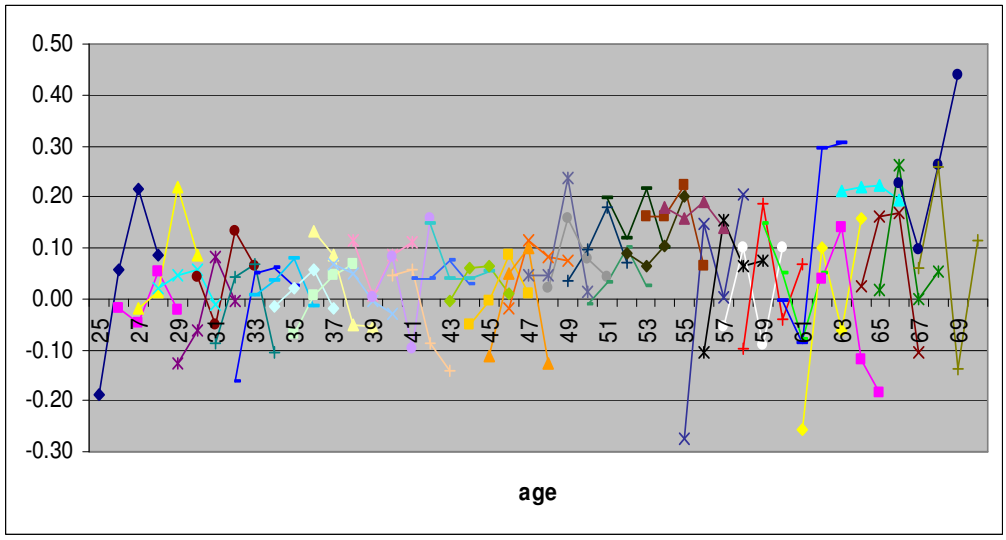

Figure 4.127: Median Saving Rate by Cohorts (Informal)

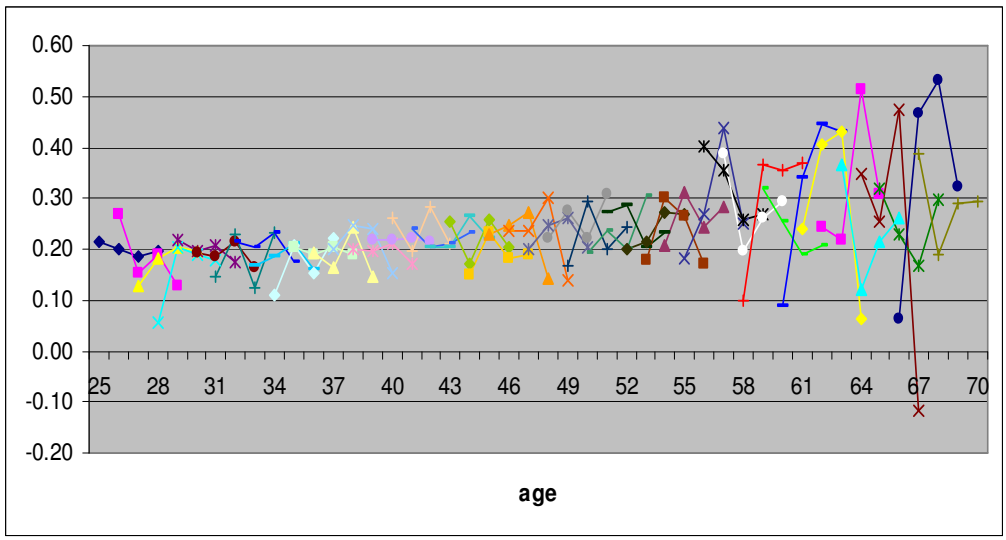

Figure 4.128: Median Saving Rate by Cohorts (Formal)

According to the figures, while the profile of informal households exhibits a relatively flatter pattern, formal households' profile is found to increase with age. One possible reason of this difference could be having formal households better positions at their jobs at older ages such as managers and etc.

According to the precautionary saving model, the higher income uncertainty could lead to higher savings. In case of formal and informal households, the probability of being unemployed for the informal sector workers is higher that their formal counterparts. However, according to the figures, the saving rates of formal households are higher than the informal households. As mentioned before, the social security contributions are considered as savings which made it possible to compare the formal-informal saving rates and check for the existence of precautionary motive. On the other hand, the saving rates of formal households calculated without including the social security contributions are also reported in Figure 4.129 in order to see the effect of these contributions. It is observed that, the social security contributions are the significant part of the savings especially for the

young households[43]. Moreover, even when we exclude the social security contributions from income, still the savings of formal households are higher than the informal households.

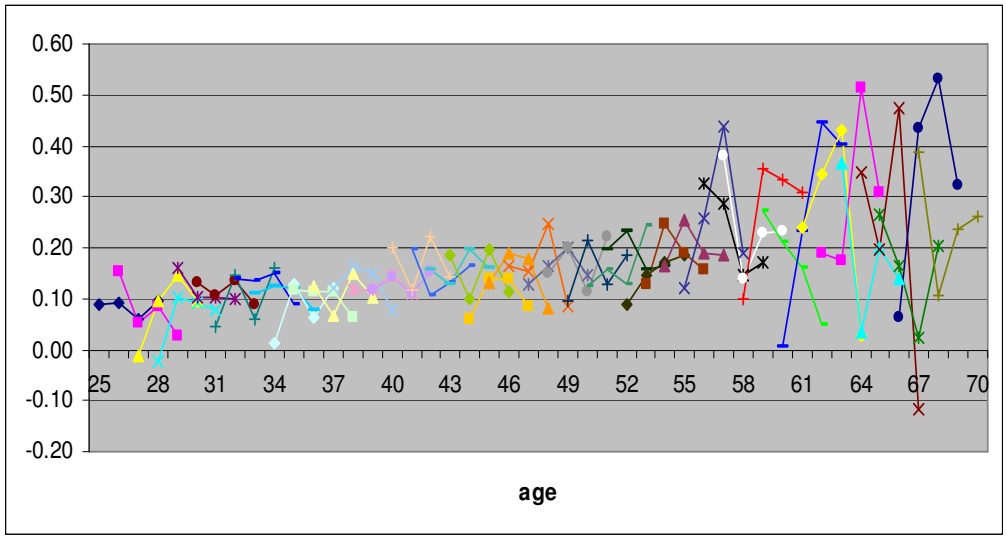

Figure 4.129: Median Saving Rate When Savings Do Not Include Social Security Contributions (Formal)

4.6.5 Saving Rate with Durable, Health and Education Expenditures

The wider definition of saving rate which considers durables, education and health as saving is also analyzed for formal and informal households. The median saving rates of each cohort against the age of the household head for both types of households are plotted in Figure 4.130 and Figure 4.131. The difference between the profiles of informal and formal households are similar to the previous definition of saving rate, therefore no further comments will be made.

[43] The speed of increase in saving rate profile without social security contributions is lower (Figure 4.129) relative to profile calculated by including social security deductions (Figure 4.128).

On the other hand, when the two definitions of the saving rates are compared for each household type, it is observed that the saving rate profile for the wider definition is flatter than the profile for previous definition for both types of households. These flatter profiles could be due to the higher spending of young cohorts to the durables as mentioned in durable consumption analyses.

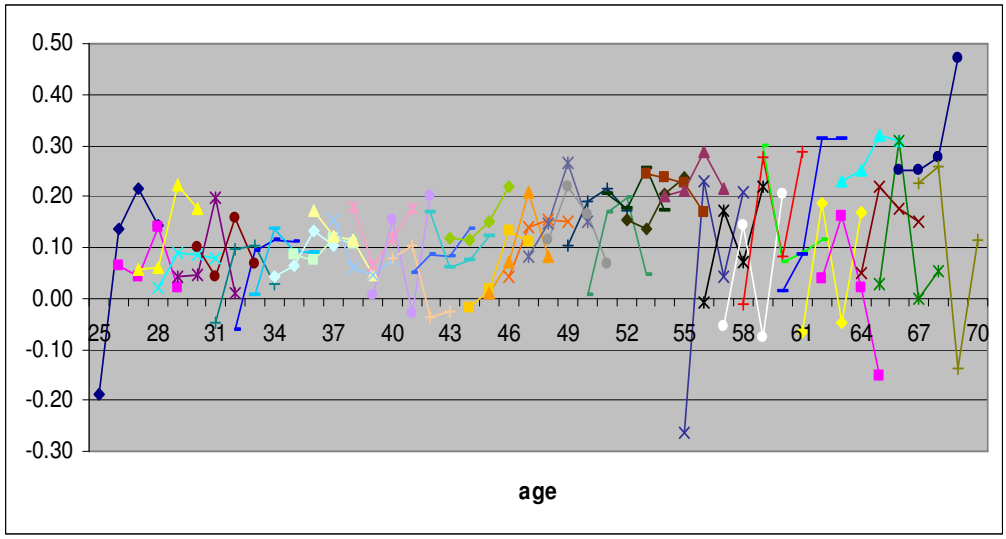

Figure 4.130: Median Saving Rate by Cohorts (Informal)

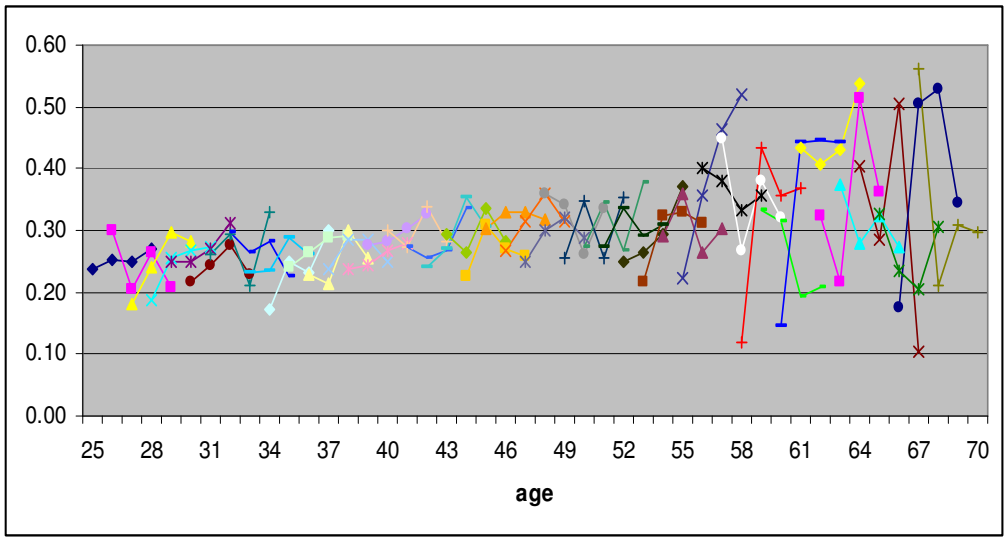

Figure 4.131: Median Saving Rate by Cohorts (Formal)

4.7 Concluding Remarks

For a better understanding of income, consumption, saving analyses, first the household composition and education of the household heads are investigated using synthetic panel data techniques. It is found that the household size exhibits hump shape for all three education groups and it is decreasing with age. The education analyses indicate that the younger households are more educated. At the two ends of the life-cycle we observe the old/young families prefer to live with their children/parents. The number of these extended families is higher for the least educated group. In other words, the low income of the least educated households forces them to live with their parents.

The shape of income profile exhibits a hump shape however hump is not as pronounced as that of developed countries. The preferring of young and old households to live their parents prevent significant drops in income at the two ends of the life-cycle. The decomposition of the age, cohort and year effects reveals that the hump profile is coming from the cohort effects; the younger cohorts have higher lifetime income. The decomposed age profile is found to be increasing with age. The reason of that kind of profile could be the preferring of old households to live with their children. In addition to the labor income of the children, these extended households can have pension and transfer income which prevent a drop at old ages. The decrease in year effects from 2002 to 2003 and the increases from 2003 to 2004 and 2004 to 2005 are consistent with the high growth rates of Turkey in 2002, 2004 and 2005. While the life-cycle profiles of income exhibit hump shape for the first two education group, the profile of college graduates exhibit a slightly increasing trend up to age 60 then stays relatively flat thereafter.

Consumption profile exhibits a hump shape profile similar to income. The similarity of income and consumption profiles is interpreted as evidence against the life-cycle theory. However, the effects of household composition and labor supply decision which have life-cycle dynamics as well are ignored in these graphs. In this respect,

the adult-equivalent consumption profile is constructed which exhibits a flatter trend that could be interpreted in favor of life-cycle model. According to decomposition results, there are strong cohort effects, younger cohorts consume more. Age profile is found to be increasing with age most probably due to increasing income profile by age. Moreover, the high real interest rate observed in Turkey could make the households to postpone their consumptions until late in life.

Saving profile is found to increase until the age 50 and stays relatively flat thereafter. I found positive savings for both very young and very old household heads which is inconsistent with the life-cycle theory. The literature can explain the positive savings of the young household with liquidity constraints and precautionary savings motive, and the old households with health risk, lifetime uncertainty and bequest motive. A slightly increasing profile is found for the saving rate. The decomposed age profile for saving rate presents a flat pattern until the fifties and an increase thereafter. The lower dependency ratio can lead to that kind of an increasing profile at old ages. Moreover, the health risk, lifetime uncertainties and bequest motive can be the other reasons. When we look at the cohort effects we see that, while for the older cohorts, the less old ones saving more, for the younger cohorts, older cohorts saves more. I have also analyzed a wider definition of saving rate that includes expenditures on durables, health and education. The comparison of two definitions of saving rate indicates that, younger households spend more on durables.

I have also investigated the components of income and consumption. The existence of high share of positive (around 50%) labor income earners stresses the fact that people are working even at old ages. Moreover, the preferring of old households with their children can be another reason of this high share. The age profile of labor income is found to be increasing with age until fifty and stays flat thereafter. The comparison of labor income profile with the total income profile emphasizes the fact that, households with older heads also earns income from other sources than labor income. A hump profile is found for the interest income which could indicate

that the households save for housing at the early part of the life-cycle and buy a house in the middle ages. The share of positive interest income earners and the magnitude of interest income are very small. Different from interest income profile, the real property income profile is found to be increasing with age. Turkish households prefer to invest their money in real estate in time. The negative cohort effects are observed at the last parts of the life-cycle; the older cohorts prefer to invest in real estate more than their predecessors. Although the percentage of households receiving transfer income is high, its amount is limited less than 600 YTL for almost all cohorts). The observed cohort effects (higher share of younger cohorts) in the profile for the percentage of households with positive transfer income can be due to the improvement in the social security system. Compared to other components income, pension income has significant contributions to the household budget. The share of households that receives pension income is expected to be close to unity after retirement such as observed in US, whereas this share is close to 80% in Turkey. This situation emerges from the facts that some of the households prefer not to retire and keep on working, or some of the old households are not covered by any Social Security System.

The share of education and health expenditures in total consumption are found very low. While the shape of education expenditure profile exhibits hump shape as expected, the shape of health expenditure profile exhibits a flat pattern unexpectedly. The good coverage of Turkish Social Security System can be the reason of this flat shape. A slight hump shape is found for durable expenditures with strong cohort effects. This result confirms the finding of higher purchases of durables of the younger cohorts.

According to the rural-urban analyses, the household size and number of nuclear families living in the same household (especially at the two ends of the life-cycle) are found to be higher for rural households. Moreover, urban households are more educated. According to the labor supply profiles of the males, while the decline is very sharp after the retirement in the urban areas, the speed of decline is low and it

stays at high levels for rural households. The reason of this difference can be the higher participation of the urban households to formal sector. The female labor force participation rates are higher for rural households especially at the end of the life-cycle.

The higher number of families living in the same household in rural areas could be one reason of the relatively flat income profile found for rural households. Another reason could be the differences in labor supply. For the rural data, the higher labor supply of the males and females at the end of the life-cycle and the higher female labor force participation rate at the beginning of the life-cycle could lead to a smoother income profile for rural households relative to their urban counterparts. A final reason can be the differences in earning opportunities in urban and rural areas. While the earnings stay relatively flat over the life-cycle in rural areas, it increases in the middle ages due to promotions and etc. and decreases with retirement and therefore exhibits hump shape in urban areas. When we look at the levels we see that the median income is found to be higher for urban households. Consumption profiles of both types of households are similar to income profiles. While saving is found to be increasing with age in urban areas, just the opposite is true for the rural areas. Moreover, older cohorts save more relative to younger ones in rural areas. The first thing to mention regarding the saving rate is that the saving rates of rural households are higher than the urban households despite their lower income. One possible reason of this higher saving rate could be the higher share of uncovered workers in rural areas. The lower consumption needs of the households in rural areas could also be another reason. For both types of households, the saving rate profiles exhibit an increasing trend. While the cohorts that are born later (younger) are saving less relative to older cohorts in rural areas, just the opposite is true for the urban households. The real wage growth, the change in the social security system and increasing uncertainty regarding the jobs could be responsible from the decreasing cohort effects (higher savings of younger cohorts) in urban household data.

Finally, according to the formal-informal analyses I found that, the share of formal households are high even at old ages due to the existence of old people that prefer to work or the old parents living with their working children. For all the age groups, the household income of formal households which also includes the social security deductions is higher than the informal households. Income profile of informal households increases until the middle of the fifties and decreases there after slightly which is expected since they are mostly blue-collar workers. For the formal households, median income increases until age sixty and slightly decreases thereafter. Consumption profiles of both groups are similar to their income profiles. While the saving rate profile of informal households exhibits a relatively flatter pattern, formal households' profile is found to increase with age. One possible reason of this difference could be having formal households better positions at their jobs at older ages such as managers and etc. According to the precautionary saving model, the presence of future uncertainty makes the households to save more. In this respect, we expect to see higher savings for informal households, however just the opposite is found. Moreover, social security contributions are found to be the significant part of the savings especially for the young households.

CHAPTER 5

TESTS OF THE CONSUMPTION THEORIES

In this part of the study, the validity of the life-cycle model and precautionary saving model for the Turkish data is investigated by employing econometric techniques. First, the consumption theories on which the empirical analysis is built is discussed, than the models of interest are estimated by using synthetic panel data constructed in the previous chapter.

5.1 Consumption Theories

Friedman's (1957) permanent income theory and Modigliani and Brumberg's (1954) life-cycle hypothesis could be accepted as the beginning of modern consumption function literature. The idea behind the modern literature is that individuals try to keep the marginal utility of expenditure constant over time, in other words they smooth consumption. This is referred as the standard consumption model (Browning and Lusardi, 1996)[44]. In order to obtain testable propositions, some restrictions should be imposed on the budget constraint and preferences.

Certainty-equivalence model (CEQ) which is widely used in the literature is obtained by imposing the following restrictions on the standard consumption model: Agents have intertemporally additive utility functions, there are perfect capital markets and there is perfect certainty or agents have quadratic utility functions. Quadratic utility implies linear marginal utility which leads to the expectation of marginal utility being equal to the marginal utility of expectation. This property of quadratic utility function is referred to as certainty equivalence which is meant to

[44] There are different categorizations of the consumption theories in the literature. In this study, the one in the Browning and Lusardi (1996) is followed.

describe the fact that it seems as if expected consumption was known with certainty. Under some additional assumptions, with quadratic utility function, consumption is found to follow a martingale, according to which expected next period consumption is equal to current consumption[45]. This martingale model of consumption is the stochastic generalization of the simplest life-cycle model which states that consumption is constant over time (Deaton, 1992).

CEQ is investigated heavily due its attractiveness coming from its simplicity. Some of the main implications of the model are: the shape of lifetime path of consumption and the shape of the expected path of income are independent; marginal propensity of consumption out of current and future expected income are the same; the old should run down their assets; anticipated changes in income have no effect on consumption and consumption changes are orthogonal to the past information model (Browning and Lusardi, 1996). However, CEQ is criticized as being restrictive and in addition to that in case of an uncertainty it does not fit the data well.

Allowing for nonquadratic preferences gives us the standard additive model. This type of preferences helps us to deal with uncertainty. This is important because as mentioned before, CEQ can be highly misleading in the presence of uncertainty. Most of the empirical work uses Euler equation implied by the standard additive model. The simplest model is based on the following utility maximization problem:

$$\max E_t \sum_{t=1}^{T} \frac{1}{(1+\delta)} u(C_t) \tag{1}$$

$$\text{s.t} \sum_{t=1}^{T} \frac{1}{(1+r)^t} C_t = A_0 + \sum_{t=1}^{T} \frac{1}{(1+r)^t} Y_t \tag{2}$$

[45] Necessary assumptions are; the real interest rate is constant and equal to the rate of time preference.

where r is the real interest rate, δ is the rate of time-preference, A_0 is the initial wealth and Y_t is the labor income. When we solve the above problem we get the following Euler equation:

$$E_t\left(\frac{(1+r_{t+1})\lambda(c_{t+1})}{(1+\delta)\lambda(c_t)}\right)=1 \tag{3}$$

where $\lambda(c_t)$ is the marginal utility of consumption at time t.

This Euler equation captures the basic idea of the modern consumption literature that the individuals try to keep the marginal utility of expenditure constant over time. It should be noted that the utility function could include the variables that affect the desirability of consumption at different points in the life-cycles such as demographics. This type of Euler equation is widely employed after its use in Hall (1978).

In order to obtain testable results, a parameterization of the utility function is needed. One of the mostly used types of the utility function is the Constant Relative Risk Aversion (CRRA) or iso-elastic utility function. The reason of its popularity is due to its providing two attractive assumptions, homotheticity and intertemporal additivity. An iso-elastic utility function is as follows:

$$u(C,Z)=\frac{1}{1-\gamma}\left(\frac{C}{\alpha(Z)}\right)^{1-\gamma} \tag{4}$$

where γ is the coefficient of relative risk aversion and the function $\alpha(Z)$ is the adult equivalence scale (usually it is required that marginal utility of consumption increasing in family size). The Euler equation obtained from this type of iso-elastic utility function is as follows:

$$\beta(1+r_t)\left(\frac{\alpha(Z_{t+1})}{\alpha(Z_t)}\right)^{\gamma-1}\left(\frac{C_{t+1}}{C_t}\right)^{-\gamma}=1+e_{t+1} \tag{5}$$

where $E_t(e_{t+1})=0$ and where β is the discount factor. The expected variance of e_{t+1} is given by σ^2_{t+1}. For simplicity; Z is taken to be a scalar and it is parameterized as $\alpha(Z)=\exp\alpha(Z)$ where α is now a parameter. If we take the logs and use approximation for logs, we reach the following linearized Euler equation:

$$\Delta \ln C_{t+1}=\tilde{\beta}+\tilde{\alpha}\Delta Z_{t+1}+\phi r_t+0.5\phi\sigma^2_{t+1}+u_{t+1} \tag{6}$$

where $\phi=1/\gamma(>0)$

$$\tilde{\beta}=\phi\ln\beta$$

$$\tilde{\alpha}=\alpha(\gamma-1)/\gamma$$

and $u_{t+1}=-\phi(e_{t+1}-0.5(e^2_{t+1},-\sigma^2_{t+1}))$

so that $E_t(u_{t+1})=0$

The first term of the above equation is a discount factor. A higher discount factor means lower impatience which leads to lower consumption in early periods and hence higher saving and consumption growth. The second term shows the effect of anticipated changes in demographics on consumption. The coefficient of interest rate gives the impact of anticipated one percent change in the discounted price of consumption on the change in consumption, therefore -ϕ is known as the intertemporal elasticity of substitution.

While the first three terms on the right hand side of the equation (6) are present in the CEQ models, the fourth term is absent from that model. The consumption shock variance represents the precautionary motive. The increase in the variance of future consumption makes the agents to save more for the future and therefore consumption growth increases. The reason behind this fact is that, when the agents

face with higher uncertainty, this makes them reduce their current consumption in order to increase (precautionary) saving.

The critical point of precautionary saving tests is to find a good control for uncertainty (proxy for the variance term in equation (6)). In addition to precautionary saving, there are other models obtained from dropping some of the assumptions of the standard additive model. For instance, leaving the perfect capital market assumption leads to liquidity constraint models and leaving the additive preferences assumption leads to habit formation models. However, since I do not investigate those models in this study, they are not covered in this part[46].

5.2 Testing of Consumption Theories with Turkish Data

In this subsection of the study, the life-cycle model and the precautionary saving model are tested for Turkish data by using Euler equation estimates. A typical Euler equation mostly used in empirical investigations is as follows (see Attanasio and Weber, 1995, Berloffa, 1997; Alessie and Ree, 2008):

$$\Delta \ln C_{t+1} = \text{constant} + \sigma \ln(1 + r_{t+1}) + u_{t+1} \qquad (7)$$

which is obtained from the log-linearization of the equation (3) with isoelastic preferences. Here once again C_t is the consumption at period t, r is the real interest rate, σ is the intertemporal elasticity of substitution and u_{t+1} is a residual which is uncorrelated with all the information as of time t. The constant term includes the log of discount rate and the second and higher conditional moments of u_{t+1}. If this error term is assumed to be distributed log-normal, constant term includes only the second moments[47]. These moments are assumed to be uncorrelated with the instruments used in the estimations. Although Carroll (2001) and Gourinchas and

[46] For a discussion of these models, see Browning and Lusardi (1996).

[47] For instance, the variance term in equation (6) is captured by the constant.

Parker (2002) state that the omission of the conditional variance of consumption growth from the estimated models could lead to problems, Attanasio and Low (2004) showed that this omission does not affect the parameter estimates.

The utility obtained from consumption depends on family composition. The marginal utility of additional expenditure will be higher when the family is more crowded, so that the life-cycle profiles of consumption and household size can be expected to have similar shapes[48] (Deaton, 1992). In this respect, model could be made more realistic by assuming that the utility is shifted by some demographic variables such as household size, number of children and etc. The utility function used in the empirical analyses is as:

$$U_t = U(C_t)\,\varphi(Z_t, \beta) \tag{8}$$

where C_t is total household consumption and $\varphi(Z_t, \beta)$ is a function of some demographic variables. As changes in φ are equivalent to a time-varying discount rate, φ is called discount factor (Attanasio and Weber, 1995). If φ is given as $\varphi(Z_t, \beta) = \exp(\beta' Z_t)$, then log-linearized Euler equation includes $\beta \Delta Z_t$.

The nonseperability of consumption and leisure is also an important issue in estimating the Euler equations. Most of the studies handle this problem by assuming a utility function that is separable between leisure and consumption. Following Attanasio and Weber (1995), nonseparability is taken into account by introducing a labor supply variable as a determinant of the marginal utility. The reason behind this procedure is the dependence of the utility obtained from a given amount of consumption to the labor force participation variables. For instance, the total consumption will increase due to job-related expenses when a member of a household works.

[48] It was also shown in the previous chapter that, the life-cycle profile of consumption is very similar to the life-cycle profiles of household size and number of children.

When we take into account the above information, the estimated Euler equation becomes:

$$\Delta \ln C_{t+1} = \text{constant} + \sigma \ln(1 + r_{t+1}) + \beta' \Delta Z_{t+1} + u_{t+1}, \quad (9)$$

where Z captures age, household size, number of children, the share of households living in rural and the labor force participation of the wives. In the previous chapter it was shown that, income, consumption and saving dynamics of households are different in rural and urban areas. Therefore, different from literature, the location of the households is also added to the model as a regressor.

The estimation of the (9) is carried out using synthetic panel. The construction of the panel is similar to the previous chapter. Cohorts are identified according to their date of births, observed from 2002 through to 2005 with ages 25-70. All the cohorts are observed for the whole period, hence the panel is balanced. The choice of the cohort definition is arbitrary. A narrow time interval can be selected to obtain homogenous cells or a wider definition can be selected to decrease the noise. As in the previous chapter, a one year interval is chosen to define a cohort in this part of the study. We have 43 cohorts observed for four survey years, therefore the number of cohort-year cells used is 172 with an average cell size of 272. The values of the variables used in the estimations are the cohort means of these variables.

The use of synthetic panels handles some problems regarding the error term. Firstly, it eliminates the idiosyncratic measurement error since I use the average of the individuals. Moreover, the long time periods of pseudo panels lead to average out the cohort specific shocks. Thus, the expected value of the error term tends to zero[49].

[49] The time span of our data is four years which could be accepted as short. In this respect, the results should be interpreted with caution.

The consumption variable is the total nondurable consumption[50] of the household which is deflated by using the consumer price index (CPI). The real interest rate is calculated as the difference between nominal interest rate (one year Treasury bill rate) and the inflation (the percentage change in CPI). Age *(age)* is the first demographic variable and it shows the age of the household head. It is taken as exogenous and measured without error. The other demographic variables are the size of the household *(hhsize)*, the number of the children *(noc)* and a dummy which takes 1 if the household is located in the rural *(rural)*. Since these variables are choice variables determined simultaneously with consumption, they are treated as endogenous. As the labor supply variable, a dummy for the full time working-wife *(ww)* is employed[51]. As a choice variable, this dummy is also treated as endogenous. As mentioned before, after its first use in Flavin (1981), the test of life-cycle model is mostly carried out using "excess sensitivity" test which is based on the relationship between expected consumption growth and expected income growth. If the model holds, there should be no relationship between these variables since consumers should smooth their expected income fluctuations. In order to apply excess sensitivity test, the change in the log of total disposable household income *(Δlny)* is included in the model.

Estimations are carried out by using generalized method of moments (GMM) due to endogeneity problem. Taking averages over cells leads to measurement error (especially if the cell sizes are small) at the level, which in turn implies an MA(1) structure in first differences. The existence of MA(1) residuals makes the one period lagged instruments invalid. Therefore, the instruments used in this study are lagged two periods in order to obtain consistent estimates. The list of the instruments are age, age squared, the second lag of: consumption growth, income

[50] Some studies use the total consumption expenditure as dependent variable. However, the existence of durable goods that are intertemporally nonseperable makes this consumption definition improper. The studies that use data from Panel Studies of Income Dynamics (PSID) define consumption as the food consumption, the use of which should make the assumption of seperability between food and other nondurables. Attanasio and Weber (1995) found evidence for the nonseperability of these. In this respect, the use of nondurables for consumption seems the best alternative.

[51] The cohort average of a dummy variable shows the share of households with the required condition within a cohort-year cell.

growth, change in the household size, change in the number of children, change in the share of working-wives, change in the share of household living in rural and change in the share of household heads that are university graduates. The use of second lags of change in the variables as instruments leave us with only one year data since our data set includes four years. This renders the use of macro variables such as real interest rate impossible. Therefore, in the regression of the model, real interest rate can not be included in the model.

Table 5.1: Euler Equations for Consumption

Variables	Regression Equations			
	1	2	3	4
Constant	0.0277* (0.0082)	0.0127 (0.0757)	0.0511* (0.0169)	0 .1180 (0.1186)
Δlny	0.7787* (0.1131)	0.7108** (0.2961)	0.6764* (0.2363)	0.5782*** (0.3192)
Δhhsize		-0.0598 (0.1093)		0.0047 (0.1277)
Δnoc		0.0509 (0.1972)		-0.1161 (0.2880)
Δrural		-0.4972 (1.0340)		-0.4409 (1.2050)
Age		0.00047 (0.0016)		-0.0012 (0.0023)
Δww			-0.6252 (0.4701)	-0.9944 (0.7175)
Hansen J Statistic p-value	8.219 (0.3136)	3.597 (0.3084)	0.858 (0.6512)	1.066 (0.7853)

Notes: * denotes significance at 1%, ** denotes significance at 5% and *** denotes significance at 10%. Robust standard errors are in parentheses. y: Total disposable household income, hhsize: Size of the household, noc: Number of children in the household, rural: A dummy for the households living in the rural areas, age: Age of the household head, ww: A dummy for the working-wife. The instruments include age, age squared, the second lag of income and consumption growth, the second lag of changes in household size, changes in number of children, changes in the share of household living in the rural, change in the share of working-wives, and change in the share of household heads that are university graduates. All of the instruments were used in all four specifications. Sample: 43 grouped observations.

Estimation results are presented in Table 5.1[52]. The first column of the table gives the estimation of (7) with addition of income growth and exclusion of real interest rate due to reason explained above. Hansen J statistics (8.219) indicates that the

[52] It should be noted, the estimations are done with only 43 observations due to satisfy the necessities of the instruments and so they should be interpreted with caution.

overidentifying restrictions holds, in other words the instruments are orthogonal to the error term. The excess sensitivity parameter is found statistically significant with a large coefficient. The significance of income growth which means the rejection of the life-cycle theory was also found with macro data for Turkey (see Ceritoğlu, 2003).

The coefficient of income growth (0.7787) is larger in magnitude than the other micro studies using cohort data. For example, Blundell et al., (1994) found it 0.320 for UK, for the same country Attanasio and Browning (1995) found an excess sensitivity parameter of 0.397 and for the US it was found 0.247 by Attanasio and Weber (1995). In a more recent study, Cutanda et al. (2001), found excess sensitivity (measured by the lag of income growth) with a coefficient of -0.080 for Spain. The higher coefficient found for Turkey is something that is expected, since the studies listed are carried out for developed countries. The existence of imperfect capital markets and higher income uncertainty in Turkey can lead to a strong relationship between consumption and income.

In column two, variables capturing the demographics are added to the specification in column one. According to Hansen J test, once again the overidentifying restrictions hold. All the demographic variables are found to be statistically insignificant, however inclusion of these variables decrease the magnitude and the significance of the excess sensitivity, as expected[53]. Blundell et al. (1994) and Cutanda et al. (2001) found a similar effect of adding demographic variables. Alessie and Ree (2008) also reported evidence in favor of excess sensitivity for Netherlands even after controlling for demographics. In Attanasio and Browning (1995) study however, adding demographic variables led to an insignificant income growth coefficient with a smaller magnitude.

[53] Some alternative combinations of these variables are estimated in order to obtain significant demographic variables, however we are unable to catch significant ones. Moreover, trying alternative combinations did not affect the coefficient and the significance of the income growth variable. In this respect, the combination that covers all the variables is reported in the table. It should also be noted that the F statistic of the first stage regressions of these variables are found insignificant as well.

Third column reports the estimation results of the extended specification in column 1 with the labor supply variable. The change in the share of working wives variable is found statistically insignificant with a negative sign. Inclusion of this variable decreased further the magnitude of the excess sensitivity. Overidentifying restrictions are not rejected in this specification as well.

Finally, the fourth column gives the results of a more general model that includes demographics and labor supply variable. In this specification, the coefficient of excess sensitivity decreased much and it is only significant at 10% level. The inclusion of demographics and labor supply variables gave evidence in favor of the life-cycle models in developed country studies using synthetic panels (Blundell et al., 1994; Attanasio and Browning, 1995; Attanasio and Weber, 1995). The possible reason of the difference between the findings of these studies and this study can be the existence of imperfect capital markets and higher income uncertainty in Turkey as mentioned before[54].

As mentioned above, the existence of imperfect capital markets which means the violation of one of the assumptions of the standard additive model may be responsible for the rejection of the life-cycle model for Turkey. The inability to borrow (liquidity constraints) could lead the households to consume all of their income.

As a possible reason for excess sensitivity, the presence of liquidity constraints is investigated by analyzing the share of households that are below the complete poverty line[55] in our data set. In year 2002, 29.39%[56] of the households are found to live below poverty line. As expected, this share is increasing with the household

[54] Berloffa (1997) found significant excess sensitivity similar to us with the UK data.
[55] Poverty line contains both food and non-food expenditures.

[56] TurkStat reports the levels of poverty line for the households up to 10 people. Therefore, this share includes households with people less than or equal to 10. Although, there are more crowded families in the survey, the share of households with 10 or less people is above 98% for all survey years.

size. For instance, while the 22% is below the poverty line for the households with two individuals, 63% is below for the households with 10 people. For the same year, the share of households living below poverty line is 13% for US and 17% for UK. For the other survey years under study, 2003-2005, 31.06%, 22.17% and 21.52% of the households fall below poverty line. These high shares can be expected to indicate the presence of liquidity constraints in Turkey.

Another commonly cited reason in the literature for the rejection of the life-cycle model is the presence of the precautionary motive. In contrast to liquidity constraint, precautionary saving hypothesis is consistent with the assumptions of the standard additive model. Theoretically, the precautionary motive is imposed by the convex marginal utility function. Convex marginal utility means that, when consumption is low, the drop in consumption leads to higher rise in marginal consumption compared to the case when consumption is high. An increase in uncertainty raises the value of future consumption due to the fear of a drop in future consumption and therefore increases saving. The CRRA type utility function satisfies this convex marginal utility assumption[57], hence most of the empirical studies use this function.

The log-linearized Euler equation with isoelastic preference is as given:

$$\Delta \ln C_{t+1} = \tilde{\beta} + \phi r_t + 0.5\phi\sigma^2_{t+1} + u_{t+1} \qquad (10)$$

where the coefficients are the same as in equation (6). As mentioned in the previous subsection, the variance term captures the precautionary saving motive. An increase in the variance of future consumption (increase in uncertainty) induces the agents to save more for the future.

[57] For a standard isoelastic utility, as in (4) without demographics, marginal utility is equal to $C^{-\gamma}$. In order to satisfy convexity γ should be positive. For this type of preferences, the risk aversion and precautionary saving is controlled by this parameter, however this is not true in general. While the degree of risk aversion is the degree of concavity of the utility function (second derivative of the utility function), degree of precaution is the degree of convexity of the marginal utility function (third derivative of the utility function).

The empirical literature on precautionary saving focuses on including some measure of risk (to represent the variance term) to the model and test for its significance. The main issue in these studies is to find a risk variable that is observable, exogenous and varies across population. Some studies use income variance that is obtained from observed income processes (for example Carroll, 1994; Carroll and Samwick 1995). The assumptions regarding the measurement error affect the results of these studies. Using consumption variance as a proxy for risk is another method used in the literature (see Kuehlwein, 1991; and Dynan, 1993). The existence of durable goods in the consumption definition and the presence of measurement error lead to problems in these studies. Another approach is to use subjective earning variance (see Guiso, Jappelli and Terlizzese, 1996; Lusardi, 1993). The reluctance of the participants to answer such questions makes this approach problematic. Occupation dummies are also used as a proxy for risk (Skinner, 1988; Mckenzie, 2006). However, the choice of occupation and risk attitudes could be correlated. For example, if prudence and risk aversion are positively correlated, the risk averse individuals will prefer less risky jobs but since they are also more prudent they are going to save more. Therefore, the analysis with occupation dummies will report no precautionary saving.

In this study, as a proxy, different from existing literature, dummies for formal and informal sector workers are used. The idea behind this approach is that: the people working in informal sectors have higher possibility of becoming unemployed and the variance of their incomes is higher. Thus, ceteris paribus, they are expected to save more in order to protect themselves from future uncertainties relative to people working in formal sectors.

This dummy variable satisfies the three required properties of a good proxy. It is observable, it varies across population and it could be accepted as exogenous. Since individuals mostly prefer to work in formal sector, we do not face the endogeneity problem regarding the occupation dummies explained above. As mentioned before,

I used the urban data for the formal-informal analyses. While the definition of formal household captures the households with at least one individual working in formal sector, the informal households consists of only individuals working in informal sector.

Two approaches are applied while constructing the data set. In the first approach, data set is constructed similar to the one used in excess sensitivity analyses. The cohorts are defined according to their year of births. The cohort averages of the variables of interest are used to construct the synthetic panel[58]. For the risk variable, a dummy variable that takes 1 for the formal sector households is created. The cohort average of this variable gives the share of formal households within a cohort-year cell.

The second approach differs from the first one in the definition of the cohorts. In this approach the cohorts are formed by year of birth and formal-informal status as in the section 4.6. The cohort averages of the variables of interest are calculated for formal and informal sector workers separately. In this case, the risk variable is created by defining a dummy that takes 1 for the cohorts if formal households and 0 for the cohorts of informal households. Naturally, this approach doubles the number of observations, however lead to a further decrease in the cell sizes.

In order to test the precautionary saving model, I estimate the equation (10), where C_t is the total nondurable household consumption, r_t is the real interest rate. The share of formal households is used as a proxy for variance (risk) term. If the precautionary saving model holds for Turkey, the coefficient of the share of formal households should be negative. Real interest rate variable is dropped from the model since the model is also estimated with GMM which uses two periods lagged instruments due to MA(1) structure in residual as explained before. Therefore the model to be estimated becomes:

[58] Since we exclude the households living in rural areas, the cell sizes are smaller than the previous analyses.

$$\Delta \ln C_{c,t+1} = \tilde{\beta}_t + Shrfor_{c,t} + u_{t+1} \quad (11)$$

where *Shrfor* is the share of formal households[59].

It was shown in the previous chapter that the incomes of formal households are higher than the informal households. In order to control for this, growth rate of income *(Δlny)* is also included to the model. Inclusion of this variable however, leads to endogeneity problem and therefore needs to be instrumented. In this respect estimations will be done using both OLS and GMM. Once again working with cohort averages leads to measurement error at the level, which in turn implies an MA(1) structure in first differences[60]. Existence of this MA(1) structure and possible heteroskedasticity in errors forces us to use the Heteroskedastic OLS (HOLS) estimation which is robust to heteroskedasticity and autocorrelation. For the GMM regression, two periods lags of the instruments are used in order to overcome the problem regarding the MA(1) structure.

Table 5.2 reports the estimation results that use the data set based on the year of the birth cohorts (first approach). While the first two columns give the OLS estimation results, the third column displays the GMM regression results. In the OLS estimations, cohort dummies, all of which are found statistically insignificant, are also included in the equations[61]. However, their results are not reported in order to keep the table clear. The first column of the table gives the estimation results of equation (11). The share of formal sector is found to have a positive sign. If

[59] The model is also estimated with demographic variables all of which are found statistically insignificant. Moreover, inclusion of these variables does not affect the significance of income growth and share of formal households variables. Therefore, we did not report the results of these analyses.

[60] In order to control for first-order serial correlation, Wooldridge test for autocorrelation in panel data is applied. The null of no first-order correlation is rejected with an F statistic 5.710 and p-value of 0.0214. For the further discussion of that test see Wooldridge (2002) and Drukker (2003).

[61] Estimations are carried out without cohort dummies as well. Dropping these variables has small effect on the coefficients and no effect on the significance of the variables. However, the significances of the F statistics increase a lot. For instance, the insignificant F, found in column 1 becomes significant at 1% level. Moreover, controlling for year effects by adding year dummies to the model did not make any significant difference in findings.

precautionary saving model holds, we expect to see a negative coefficient since an increase in the share of formal households in a given cohort would lead to a decrease in the savings of that cohort. Thus, this result contradicts the precautionary saving model. The higher income of formal households could lead to this finding, therefore we have to control for the income to obtain healthier results. The insignificant F statistic also casts doubt to that finding.

Table 5.2: Test of Precautionary Saving with Year of Birth Cohorts

	Regression Equations		
	OLS		GMM
Variables	1	2	3
Constant	-0.2535 (0.1887)	-0.0901 (0.1085)	0.0547 (0.0747)
Shrfor	0.3802** (0.1852)	0.0397 (0.1292)	-0.0379 (0.1262)
Δlny		0.7735* (0.0617)	0.6756** (0.2718)
F Statistic	0.75	7.83*	5.31*
p-value	(0.8468)	(0.0000)	0.0090
Hansen J Statistic			3.738
p-value			(0.4427)

Notes: * denotes significance at 1% and ** denotes significance at 5%. Robust standard errors are in parenthesis. y: Total disposable household income, Dfor: Share of formal households. The instruments include the second lag of income and consumption growth, the second lag of change in the share of working-wives, change in the share of household heads that are university graduates and second lag of the share of formal households. Sample: In OLS estimations 129 grouped observations and in GMM 43 grouped observations.

In specification 2, the effect of income is controlled by adding income growth as an additional regressor. The model seems valid according to F statistic. The coefficient of income growth (excess sensitivity) is found significant with a magnitude close to the ones given in the first two columns of Table 5.2. After controlling for income, the proxy for risk variable, share of formal households, is found to be statistically insignificant, which confirms the fact that formal households save due to their higher income. However, this finding also means that, we find no evidence of precautionary saving for Turkish households.

As mentioned before, when the income growth variable is added to the model it can lead to an endogeneity problem. In this respect, specification two is estimated by

also using GMM and the results are given in the third column of Table 5.2. The instruments used are the second lag of consumption growth, income growth, change in the share of working-wives, change in the share of household heads that are university graduates and the share of formal households. According to the table, overidentifying restrictions hold according to Hansen J statistic. The significance and the magnitude of income growth are decreased relative to OLS estimation, but still there is evidence of excess sensitivity. The coefficient of formal share is found insignificant but this time with a negative sign as the precautionary saving model predicts. To sum up, I could not find evidence that Turkish households behave according to the precautionary saving model. In order to confirm that our results are robust, an alternative data set is constructed as mentioned above.

Table 5.3: Test of Precautionary Saving with Cohorts Formed by Year and Formal-Informal Status

	Regression Equations		
	OLS		GMM
Variables	1	2	3
Constant	0.0791 (0.0492)	-0.0070 (0.0227)	0.0279 (0.0224)
Dfor	-0.1305 (0.1684)	-0.0217 (0.0634)	0.0014 (0.0315)
Δlny		0.6230* (0.0526)	0.5264** (0.2090)
F Statistic	3.34*	4.76*	4.32
p-value	(0.0000)	(0.0000)	(0.0000)
Hansen J Statistic			2.74
p-value			(0.2541)

Notes: * denotes significance at 1% and ** denotes significance at 5%. Robust standard errors are in parenthesis. y: Total disposable household income, Dfor: A dummy for the cohorts of formal households. The instruments include the second lag of income and consumption growth, the second lag of change in the share of working-wives and second lag of the dummy for formal household cohorts. Sample: In OLS estimations 258 grouped observations and in GMM 86 grouped observations.

Constructing data set by crossing year of birth cohorts with formal-informal status has the advantage of increase in sample size (doubled relative to previous data set) with the cost of increasing noisiness due to lower cell sizes. As in Table 5.2, the first two columns report the results of OLS estimations with cohort dummies as

additional regressors. GMM results are given in third column. The estimation procedures are the same as the previous estimations.

According to results, the F statistics state the model is valid and Hansen J statistic indicates that instruments are orthogonal to the error term. In all three estimations, the coefficient of formal cohort dummy is found statistically insignificant. Although this result is against the findings of synthetic panel studies (see for example, Banks et al. (1999) for UK and Albarran (2000) for Spain), it coincides with the results of the papers that use occupation dummy as a risk proxy which is close to our risk variable. Skinner (1988) and Jappelli and Pagano (1994) found that, households whose head works in a risky occupation do not save more than households whose head work in a less risky occupation. In contrast to formal cohort dummy, the excess sensitivity coefficient found significant in both OLS and GMM estimations.

The analyses through out this chapter emphasize the fact that, the behavior of Turkish households is not consistent with the implications of life-cycle model. The reason behind this seems to be liquidity constraints not precautionary saving behavior. However, to confirm this finding, more detailed analyses should be carried out regarding the liquidity constraints.

5.3 Concluding Remarks

The excess sensitivity parameter in the Euler equation estimation is found significant with a larger coefficient than that of developed country studies as expected. Although controlling for demographics and labor supply decision which have life-cycle dynamics as well, decreased the magnitude and significance of the excess sensitivity parameter, it is still found statistically significant which indicates the rejection of the life-cycle theory.

As a possible reason of the rejection of life-cycle theory, existence of liquidity constraints in the data is investigated by reporting the share of the households that

are living below the poverty line. The reported high shares can be accepted as evidence for the presence of liquidity constraints in Turkey. Finally, the presence of the precautionary saving, another reason of the rejection of life-cycle theory, is tested using formal-informal household data. Since the informal households face higher income uncertainty and their probability of being unemployed is higher, we expect them to have higher (precautionary) saving relative to formal households. According to the estimation results of Euler equation with formal household dummy, I found no evidence of precautionary saving in the data. To sum up, life-cycle model does not hold for Turkey but I find no evidence that it is due to the precautionary saving.

CHAPTER 6

CONCLUSION

In this study, income, consumption and saving dynamics are analyzed by using 2002-2006 Turkish Household Budget Survey (HBS). Firstly, cross-sectional profiles are derived using 2006 HBS. Some of the findings that emerge from these analyses are as follows: The income and consumption profiles exhibit hump shapes; however, the consumption profile is found to be flatter than income profile, similar to other country studies. Income and consumption inequalities do not change much by age. Analyses conditional on educational attainment show that the hump-shape of income for the whole sample is rotated counterclockwise for all the education groups. This indicates the importance of cohort effects, which means that a difference between groups is due to variables associated with their birth period, in Turkey. Median saving is positive regardless of household head's age; even for households with very old and very young heads. Similar to the findings of cross-sectional data for many countries, saving is found as an increasing function of disposable income. The age-profile of saving rate exhibits a slightly increasing trend with age which could be due to lower dependency ratio, health risk, lifetime uncertainty and bequest motive. While the bequest motive makes the old households to save for their children, health risk forces them to save for possible health expenditures in future. Moreover, if the old families prefer to live with their working children, the share of people earning income is going to be higher, in other words; the dependency ratio will be lower. The existence of this situation can lead to higher saving rate.

The cross-sectional profiles are also used to assess the changes in variables of interest from 2002 to 2006. Income profiles in all years have the same hump-shape that peaks at late 40's and early 50's. Income levels in 2002 and 2003 were very

similar. However, there was an increase in real income in 2004 and a further increase in 2005 for all age groups. In 2006, the rising trend of income stopped. The ways consumption profiles vary over time are very similar to that for income profiles. However, the increase in the level of consumption in 2004 is not as high as that in income; as a result, saving levels increase in 2004. In 2005, on the contrary, since the increase in consumption is higher than the increase in income, saving levels fall. Examining the change in the saving rates over time, I find that in 2004 saving rates are higher than those in all other years for almost all age groups. In other words, higher saving levels in 2004 were brought about by not only higher earnings but also a higher propensity to save. Despite higher income levels in 2005 and in 2006 compared to 2004, I find that saving rates are lower.

The use of single cross-section can only provide a limited picture if we are interested in variables that present dynamic behavior such as consumption and saving. In addition, if there are strong cohort effects, interpretation of the cross-section profile as the life-cycle profiles of the variable can be misleading. Therefore, income, consumption and saving are also investigated employing cohort analyses. I first investigate the household income and plot the life-cycle profile using pseudo-panel data. The shape of income life-cycle profile exhibits a hump shape however hump is not as pronounced as that of developed countries. The preferring of young and old households to live their parents prevent significant drops in income at the two ends of the life-cycle. The decomposition of the age, cohort and year effects reveals that the hump profile is coming from the cohort effects; the younger cohorts have higher lifetime income. The decomposed age profile is found to be increasing with age. The reason of that kind of profile could be the preferring of old households to live with their children. The decrease in year effects in income from 2002 to 2003 and the increases from 2003 to 2004 and 2004 to 2005 are consistent with the high growth rates of Turkey in 2002, 2004 and 2005.

Consumption profile exhibits a hump shape profile similar to income. The similarity of income and consumption profiles is interpreted as evidence against the life-cycle

theory. However, the effects of household composition and labor supply decision which have life-cycle dynamics as well are ignored in these graphs. In this respect, the adult-equivalent consumption profile is constructed which exhibits a flatter trend that could be interpreted in favor of life-cycle model. According to decomposition results, there are strong cohort effects, younger cohorts consume more. Age profile is found to be increasing with age most probably due to increasing income profile by age. Moreover, the high real interest rate observed in Turkey could make the households to postpone their consumptions until late in life. The flatter pattern observed after age 60 could be due to the lower consumption needs after the retirement and the flatter household size profile after that age.

Saving profile is found to increase until age 50 and stays relatively flat thereafter. I found positive savings for both very young and very old household heads which is inconsistent with the life-cycle theory. The literature can explain the positive savings of the young household with liquidity constraints and precautionary savings motive, and the old households with health risk, lifetime uncertainty and bequest motive. Regarding the saving rate, a slightly increasing profile is found. The decomposed age profile for saving rate presents a flat pattern until the fifties and an increase thereafter. The lower dependency ratio can lead to that kind of an increasing profile at old ages. Moreover, the health risk, lifetime uncertainties and bequest motive can be the other reasons. When we look at the cohort effects we see that, while for the older cohorts, the less old ones saving more, for the younger cohorts, older cohorts saves more. I have also analyzed a wider definition of saving rate that includes expenditures on durables, health and education. The comparison of two definitions of saving rate indicates that, younger households spend more on durables.

In addition to total income and consumption, their components are analyzed as well. The existence of high share (around 50%) of positive labor income earners after age 60 which is different from other countries stresses the fact that people are working even at old ages. Moreover, the preferring of old households with their children can

be another reason of this high share. A hump profile is found for the interest income which could indicate that the households save for housing at the early part of the life-cycle and buy a house in the middle ages. The share of positive interest income earners and the magnitude of interest income are very small. Different from interest income profile, the real property income profile is found to be increasing with age which means that Turkish households prefer to invest their money in real estate in time. The negative cohort effects are observed at the last parts of the life-cycle; the older cohorts prefer to invest in real estate more than their predecessors. Although the percentage of households receiving transfer income is high, its amount is limited (less than 600 YTL for almost all cohorts). The observed cohort effects (higher share of younger cohorts) in the profile for the percentage of households with positive transfer income can be due to the improvement in the social security system. Compared to other components income, pension income has significant contributions to the household budget. The share of households that receives pension income is expected to be close to unity after retirement such as observed in US, whereas this share is close to 80% in Turkey. This situation emerges from the facts that some of the households prefer not to retire and keep on working, or some of the old households are not covered by any Social Security System.

Decomposition of total consumption reveals some important findings. The shares of education and health expenditures in total consumption are found to be very low (lower than 5%). While the shape of education expenditure profile exhibits hump shape due to high number of children that go to school at the middle-ages of the household head, the shape of health expenditure profile exhibits a flat pattern unexpectedly. The good coverage of Turkish Social Security System can be the reason of this flat shape. A slight hump shape is found for durable expenditures with strong cohort effects which means that younger cohorts spends more on durables.

Income, consumption and saving dynamics could be different in rural and urban areas. Therefore, I investigate the dynamics of the variables of interest by dividing

the sample according to the location of the households. Income profile for the rural households is found to be relatively flatter than the one for urban households. The higher number of families living in the same household in rural areas and/or the higher labor supply of the males and females at the end of the life-cycle and the higher female labor force participation rate at the beginning of the life-cycle could explain the flatter profile. Moreover, the differences in earning opportunities in urban and rural areas can lead to a flatter profile. While the earnings stay relatively flat over the life-cycle in rural areas, it increases in the middle ages due to promotions and etc. and decreases with retirement and therefore exhibits hump shape in urban areas. Consumption profiles of both types of households are similar to income profiles. While saving is found to be increasing with age in urban areas, just the opposite is true for the rural areas. Moreover, older cohorts save more relative to younger ones in rural areas. The first thing to mention regarding the saving rate is that the saving rates of rural households are higher than the urban households despite their lower income. One possible reason of this higher saving rate could be the higher share of uncovered workers in rural areas. The lower consumption needs of the households in rural areas could also be another reason. For both types of households, the saving rate profiles exhibit an increasing trend. While the cohorts that are born later (younger) are saving less relative to older cohorts in rural areas, just the opposite is true for the urban households. The real wage growth, the change in the social security system and increasing uncertainty regarding the jobs could be responsible from the decreasing cohort effects (higher savings of younger cohorts) in urban household data.

According to the precautionary saving model, an uncertainty regarding the income can lead to an increase in the (precautionary) savings of the households. In order to control this fact, I have divided the data set into two; formal and informal households. The higher probability of being unemployment and the higher income uncertainty of the informal households could make them to save more relative to formal households. When we look at the share of formal households we see that it is high even at old ages most probably due to the existence of old people that prefer to

work or the old parents living with their working children. Although, I am interested in the differences in saving rates, I analyze the income and consumption for these two groups of households as well. In the income analyses, I have adjusted the income of formal households by adding the social security deductions to the net income since these deductions are nothing but the savings for retirement. For all the age groups, the household income of formal households which includes the social security deductions is higher than the informal households. Income profile of informal households increases until the middle of the fifties and decreases thereafter slightly which is expected since they are mostly blue-collar workers. For the formal households, median income increases until age sixty and slightly decreases thereafter. As mentioned before, what I am primarily interested is the differences in saving rates of the both types of households. The comparison of the rates shows that, the saving rates of formal households are higher which contradicts the precautionary saving model. The saving rates of informal households are even lower than the formal households when we do not consider the social security contributions as savings. A final point worth to mention is that, social security contributions are found to be the significant part of the savings especially for the young households.

Finally, I test the life-cycle model by estimating a log-linearized Euler equation with an income growth variable which is referred as "excess sensitivity" parameter in the literature. If the model holds, there should be no relationship between expected consumption growth and expected income growth. According to the results, income growth variable is found statistically significant with a larger coefficient than the ones found for developed countries which means the rejection of the life-cycle model. I find significant (but smaller in magnitude) coefficient even after controlling for demographics and labor supply decision which have life-cycle dynamics as well. I test the precautionary saving model, a possible reason of the rejection of the life-cycle model, by estimating an Euler equation with formal-informal data as a proxy for risk. Both the OLS and GMM estimations found no

evidence of precautionary saving in our data. To sum up, life-cycle model does not hold for Turkey but I find no evidence that it is due to the precautionary saving.

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APPENDICES

APPENDIX A

TABLES

Table A.1: Descriptive Statistics of Cohort Data Used in Econometric Analyses

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Log(Income)	172	8.8365	8.8380	0.1513	8.3889	9.1389
log(Consumption)	172	8.6333	8.6385	0.1336	8.2396	8.9160
Share of Working Wives	172	0.1939	0.1958	0.0517	0.0680	0.3320
Share of Rural Households	172	0.2637	0.2699	0.0890	0.0680	0.5224

Table A.2: Descriptive Statistics of Cohort Data Used in Rural-Urban Analyses

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Income (Urban)	172	7799.009	7655	1467.102	4600	11200
Income (Rural)	172	5661.415	5550	958.3693	3180	9220
Consumption (Urban)	172	6945.367	6880	1179.379	4710	10089.65
Consumption (Rural)	172	4904.003	4840.38	841.912	2870	7880
Saving (Urban)	172	766.3732	739	387.8653	-417	2157.11
Saving (Rural)	172	573.5965	556.525	573.6198	-1220	2520
Saving Rate (Urban)	172	0.1091675	0.10800	0.048481	-0.12203	0.235194
Saving Rate (Rural)	172	0.1099082	0.11487	0.104702	-0.2149	0.366344
Saving Rate2 (Urban)	172	0.1766877	0.18258	0.049346	-0.04048	0.291277
Saving Rate2 (Rural)	172	0.1782404	0.182444	0.088729	-0.13234	0.386478

Notes: Saving Rate2 is a wider definition of saving rate that considers durable, health and education expenditures as saving, as well.

Table A.3: Descriptive Statistics of Cohort Data Used in Formal-Informal Analyses

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Income (Formal)	172	11307.14	10500	6092.845	5866.14	73900
Income (Informal)	172	5935.624	5600	1775.684	2585.11	12400
Consumption (Formal)	172	8582.57	8093.75	3050.679	4790	30600
Consumption (Informal)	172	5574.931	5415	1457.829	1448.17	11700
Saving (Formal)	172	2799.941	2110	3983.183	-684.51	48000
Saving (Informal)	172	375.3812	258	723.5847	-1250	4990
Saving Rate (Formal)	172	0.1670154	0.14548	0.1073494	-0.11669	0.64875
Saving Rate (Informal)	172	0.0536796	0.05201	0.108436	-0.27578	0.43980
Saving Rate3 (Formal)	172	0.2353101	0.2163	0.0902895	-0.11669	0.64875

Notes: Saving Rate3 is a wider definition of saving rate that considers social security contributions as saving, as well.

Table A.4: Descriptive Statistics of Cohort Data Used in Precautionary Saving Test

Variable	Obs.	Mean	Median	Std. Dev.	Min	Max
Log(Income)	172	8.960253	8.96948	0.17540	8.4096	9.2881
log(Consumption)	172	8.760351	8.777225	0.14224	8.3976	9.0985
Share of Formal Households	172	0.6129587	0.656695	0.13532	0.125	0.8205
Log(Income) Formal	172	9.243229	9.215955	0.29188	8.5885	10.7055
log(Income) Informal	172	8.641149	8.625045	0.27726	7.7935	9.36493
log(Consumption) Formal	172	8.940384	8.94175	0.20484	8.5195	9.87899
log(Consumption)Formal	172	8.521067	8.523335	0.21476	7.7799	9.07681

APPENDIX B

TURKISH SUMMARY

Tüketim GSMH'nin en büyük kısmını oluşturmaktır ve refahın en önemli belirleyicisi olarak kabul edilmektedir. Ayrıca, tüketim kararlarına bağlı olan tasarruflar sermaye birikimi, yatırım dinamikleri, büyüme ve kalkınma için oldukça hayatidir. Dolayısı ile tüketim ve tasarruf davranışı hem makroekonomide hem de mikroekonomide en önemli konuların başında gelmektedir. Uluslararası literatürde bu konu en çok çalışılan ve tartışılan konular arasında yer almaktadır.

Literatürede tüketim davranışını analiz etmek için pek çok model geliştirilmiştir. Bunlar arasında Friedman'ın (1957) sürekli gelir hipotezi (permanent income hypothesis) ve Modigliani ve Brumberg'in (1954) yaşam döngüsü hipotezi (life-cycle hypothesis) modern tüketim fonksiyonu teorilerinin temelini oluşturmaktadırlar. Tüketimin ve tasarruf davranışının dinamik bir olgu olduğunu kabul eden bu teorilerin temel vurgusu, bireylerin zamanlar arasında bölüşümler yaparak tüketimin marjinal faydasını sabit tutma çabalarıdır.

En basit haliyle yaşam döngüsü hipotezi bireylerin yaşamları boyunca aldıkalrı tüketim kararlarını inceler. Gelirin sadece çalışılan dönemde geldiği varsayımı altında bireyler çalıştıkları dönem boyunca tasarruf ederler ve bu tasarruflarını emeklilik yıllarında tüketimlerini arzu edilen bir seviyede tutmak için kullanırlar. Sürekli gelir hipotezi ise kısa dönemde tüketimin evrimini ve gelirle ilişkisini inceler. Teoride gelir iki kalemden oluşmaktadır; sürekli gelir ve geçici gelir. Tüketimdeki değişiklik sürekli gelire bağlıdır çünkü bireyler ancak gelirlerindeki değişikliğin kalıcı olduğunu bilirlerse tüketim davranışlarını değiştiriler. İki model arasındaki en önemli fark, modellerin temel aldıkları zaman boyutundan kaynaklanmaktadır. Yaşam döngüsü modeli sonlu zamana sahip bir modelken,

sürekli gelir modeli sonsuz bir zaman boyutuna sahiptir. Ayrıca, yaşam döngüsü modeli yaş, tüketim, tasarruf ve varlık birikimi ilişkisine bakarken, sürekli gelir modeli tüketimin dinamik davranışlarına odaklanmıştır.

Günümüzdeki çalışmaların çoğu, ilk olarak Hall (1978) tarafından geliştirilen, sürekli gelir hipotezinin rasyonel beklentiler eklenmiş halini kullanmaktadırlar. Buna göre, cari ve geçmiş dönemki gelirin cari tüketim üzerinde öngörülen etkisi yoktur. Flavin (1981) Hall'ün modeline benzer bir modele otoregresif yapıya sahip bir ücret geliri dinamiği eklemiştir. Yaptığı tahminler sonucunda gelirin geçmiş dönemki değerlerini, "aşırı duyarlılık" (excess sensitivity) parametrelerini, istatistiksel olarak anlamlı bulmuştur. Bir diğer deyişle, gelirdeki beklenen değişikler tüketimdeki değişimleri öngörmüştür ki bu sonuç, yaşam döngüsü hipotezinin reddi anlamına gelmektedir.

Hall ve Mishkin (1982), yaşam döngüsü modelinin testini Flavin'e (1981) benzer şekilde ancak mikro veri kullanarak (Panel Study of Income Dynamics'den elde edilen veriler) yapmışlardır. Mikro veri kullananmanın avantajıyla hanehalkı karakteristiklerine göre kontrol edildiğinde modelin geçerli olduğu sonucuna ulaşmışlardır. Panel veri kullarak yapılan çalışmalarda, farklı fayda fonksiyonları (ikinci dereceden (quadratic) ve fayda CRRA gibi), farklı kontrol değişkenleri ve farklı tüketim tanımları (gıda tüketimi, dayanıksız mal tüketimi gibi) kullanılarak yaşam döngüsü modelinin geçerliliğini test edilmiştir. Bazı örnek çalışmalar şunlardır: Bernanke (1984), Altonji ve Siow (1987), Lusardi (1986) ve DeJuan ve Seater (1999).

Literatürde, mikro veri ve makro veri kullanan çalışmaların dışında, uzun panel veri setlerinin olmadığı durumlarda, Deaton (1985) ve Browning, Deaton and Irish (1985) tarafından geliştirilen yöntem de kullanılmıştır. Bu çalışmada da kullanılan bu yöntem, kohort ortamalarıyla sentetik panel veri seti oluşturmaya dayanmaktadır. Bu yöntemle yaşam döngüsü modelini test eden bazı çalışmalar şunlardır: Blundell ve diğerleri (1994), Attanasio and Weber (1995).

Yaşam döngüsü teorisinin ampirik olarak reddedilmesine gösterilen en yaygın sebepler nakit kısıtı ve ihtiyat güdüsünün varlığıdır. Zeldes (1989), Runkle (1991), Jappelli ve Pagano (1988) ve Dynan (1993) nakit kıstıyla ilgili çalışmalara; Guiso, Jappelli ve Terlizzese (1992), Carroll (1997) ve Guariglia ve Kim (2004) ise ihtiyat güdüsü ile tasarruf çalışmalarına örnek gösterilebilirler.

Gelişmekte olan ekonomiler ilgili çalışmaların büyük bir kısmında hanehalklarının tüketim ve tasarruf davranışları makro veri kullanılarak analiz edilmiş, (örneğin, bkz. Hussein ve Thirlwall, 1999; Loayza, Hebbel ve Serven, 2000; Masson, Bayoumi ve Samiei, 1998); hanehalklarının mikro seviyedeki tüketim ve tasarruf davranışı ise anket verisi eksikliğinden dolayı yeterince incelenememiştir. Gelişmekte olan ekonomiler literatürüne paralel şekilde Türkiye için de bu alanda yapılmış makro-ekonomik çalışmalar bulunmaktadır (Akçin ve Alper, 1999; Özcan, Günay ve Ertaç, 2003; Özmen ve Yavan, 1999). Ancak tüketime ilişkin teorilerin bireye veya hanehalkına dayanması sebebiyle mikro veri kullanmak daha cazip görünmektedir. Ayrıca, mikro veriye dayalı analizler bireysel farklılıkları kontrol etmeye imkan vermekte; makro veriye dayanan temsili ajan modelleri ise tüm bireysel farklılıkları ortandan kaldırmaktadır.

Türkiye ekonomisi için, bizim bildiğimiz kadarıyla mikro veri kullanılarak yapılan çalışma sayısı oldukça kısıtlıdır. Van Rijckeghem ve Üçer (2008) Hanehalkı Bütçe ve Harcama Anketleri'ni (HBA) kullanarak Türkiye'de tasarruf miktarlarını etkileyen faktörleri araştırmakta ve tasarruf davranışının yıllar üzerinde nasıl değiştiğini incelemektedirler. Yükseler ve Türkan (2008), geniş kapsamlı çalışmalarının içerisinde, yine aynı anketleri kullanarak gelir ve harcama miktarlarını, bunların türlerine göre dağılımını ve gelir dilimlerine göre nasıl değiştiğini detaylı olarak incelemektedirler. Duygan (2005), 1994 yılı Hanehalkı Tüketim Anketini kullanarak işsiz kalma riskinin dayanıklı tüketim malları alma kararını olumsuz yönde etkilediği sonucuna ulaşmıştır. Duygan (2006) ise, aynı veri setini kullanarak, 1994 yılında yaşanan krizin farklı sosyo-ekonomik özelliklere

sahip hanehalklarının refah seviyelerini nasıl etkilediğini, tüketimlerini analiz ederek incelemiştir. Mikro veri kullanan bir diğer çalışmada ise Duygan ve Güner (2007), 1994 ve 2002 Hanehalkı Gelir ve Tüketim Anketlerini kullarak Türkiye'deki gelir ve tüketim eşitsizliğini incelemiş ve özellikle de bu eşitsizlikte eğitimin rolünü analiz etmişlerdir.

Bu çalışmanın amacı Türkiye'deki hanehalklarının gelir, tüketim ve tasarruflarını anlamaktır. Tüketim ve tasarrufları anlamak pek çok açıdan hayatidir. İlk olarak, daha önce belirtildiği gibi tüketim GSMH'nin en büyük payını oluşturmaktadır ve refahın da en önemli belirleyicisidir. İkinci olarak, tasarruflar sermaye birikimi, yatırım dinamikleri, büyüme ve kalkınma için oldukça önemlidir. Bunlara ilave olarak, gelişmekte olan bir ülke olarak Türkiye'de etkin finansal piyasaların eksikliği, birikmiş tasarrufları olmayan hanehalklarını olumsuz ekonomik koşullarla karşılaştıklarında tüketimlerini düzenleyemez hale getirmektedir. Bu da uzun vadeli olumsuz sonuçlar ortaya çıkarabilir; çünkü böyle bir durumda hanehalkları beşeri sermaye yatırımlarını askıya almak, dolayısıyla gelecekteki kazanma kapasitelerini artırma şansından yoksun kalacaklardır. Son olarak, tasarrufların yetersiz kalıp yatırımları karşılamadığı durumlar cari işlemler açığına yol açarak ekonomilerin kırılganlıklarını artırmaktadır. Cari işlemler açığının finansmanı yurt dışından gelen sermayeyle karşılanmaktadır. Ancak içinde bulunduğumuz küresel krizde karşı karşıya kaldığımız gibi, yaşanan yoğun sermaye çıkışı, ülke parasının değer kaybına ve ekonominin küçülmesine yol açabilmektedir. Bu bağlamda dış finansman ihtiyacının asgaride tutulması için yurtiçi tasarruflar büyük önem taşımaktadır.

Bu çalışmanın önemi şu faktörlerden kaynaklanmaktadır: Bir ülkedeki tassarruflar, ülkedeki gelir kazanan ve dolayısıyla tasarruf edebilen nüfusun oranına bağlıdır. Bu bağlamda yaşa göre tasarruf profillerini çıkarmak ülkenin tasarruf oranını anlamak (bunun ne kadar hayati olduğundan yukarıda bahsedilmiştir) ve geleceğe ilişkin öngörülerde bulunmak için önemlidir. Çalışmanın bir başka önemi, farklı tüketim modellerinin mikro verilerle test edilmesidir. Bu teorilerin testlerinde mikro veri kullanmak önemlidir çünkü tüketim teorileri birey ya da hanehalklarının

davranışlarına dayanmaktadır. Son olarak, gelir, tüketim ve tasarrufları detaylı bir şekilde analiz eden bu çalışma, mikro verilerle çalışmalar yönünden kısır olan Türkiye ve gelişmekte olan ülke literatürlerine katkıda bulunacak ve ilerde yapılacak çalışmalara referans olabilecektir. Bunlara ilave olarak, çalışmamızda değişkenleri incelerken yalnızca tüm popülasyona göre değil, eğitim gruplarına göre de analizler yapılmıştır. Bu sayede tasarrufların gelir dağılımına göre nasıl faklılık sergilediğini görmek mümkün olacaktır. Toplumun farklı tabakalarının farklı tasarruf güdülerine sahip oldukları düşünüldüğünde bu durum oldukça önemlidir.

Çalışma, Türkiye İstatistik Kurumu (TÜİK) tarafından yayınlanan, 2002-2006 Hanehalkı Bütçe Anketleri'ne dayanmaktadır. Bu anketlerde, hanehalkının yapısı ve sosyo-ekonomik durumları ile ilgili bilgi bulunmaktadır. Ayrıca, tüketim harcamaları ve gelirle ilgili detaylı bilgiler de yine bu anketlerde yer almaktadır. Daha önceki yıllarda bazı anketler uygulansa da, Türkiye İstatistik Kurumu (TÜİK) 2002 yılından sonra düzenli olarak her yıl anket uygulamaya başlamıştır. 2002 anketi kentsel ve kırsal kesimden toplam 9600 hanehalkına uygulanmıştır. Avrupa Birliği uyum çalışmaları çerçevesinde uygulanacak olan harmonize tüketici endeksine baz oluşturması için, 2003 yılında anketin örnek çapı 25920 hanehalkını kapsıcak şekilde artırılmıştır. 2004, 2005 ve 2006 yıllarında ise örneklem büyüklüğü 8640 hanehalkına sabitlenmiştir. Hanehalkı Bütçe Anketi, Türkiye Cumhuriyeti sınırları içinde yaşayan tüm hanehalkları fertlerini kapsamaktadır. Ancak kurumsal nüfus kapsam dışı bırakılmıştır. Örneklem seçiminde tabakalı iki aşamalı küme örneklemesi yöntemi kullanılmıştır. Anketler bir yıl süreyle kırsal kesimden (nüfusu 20.000 ve daha az olan yerleşim yerleri) her ay değişen belirlenen sayıda ve kentsel kesimden (nüfusu 20.001 ve daha fazla olan yerleşim yerleri) yine her ay değişen belirlenen sayıda hanehalklarına uygulanmaktadır. Örneklem birimi olarak, aralarında akrabalık bağı bulunsun ya da bulunmasın aynı konutta veya konutlarda ya da aynı konutun bir bölümünde yaşayan, kazanç ve masraflarını ayırmayan, hanehalkı hizmet ve yönetimine katılan bir veya birden fazla kişiden oluşan topluluk olarak tanımlanan hanehalkı kullanılmıştır. Anketler için anketörler hanehalklarını, anket ayı öncesinde bir, birinci ve ikinci haftada ikişer, üçüncü ve

dördüncü hafta bir ve anket ayı bitiminde bir kez olmak üzere toplam sekiz kez ziyaret etmekte, gelir ve tüketim bilgilerini kaydetmektedirler. Örneğe seçilen asıl örnek hanehalkı ile anket yapılamaması durumunda ikame yaklaşımı kullanılmıştır.

Anketlerden elde edilen bilgi 3 tip veri setinde toplanmıştır; fert veri seti, hane veri seti ve tüketim veri seti. Fert veri setinde bireylerin yaşı, cinsiyeti, eğitimi, istihdam durumu ve gelirleri gibi değişkenler bulunurken, hane veri setinde hanehalkının sosyo-eonomik durumunu gösteren değişkenler yer almaktadır. Tüketim veri setinde ise mal ve hizmetlere yapılan harcamalarla ilgili değişkenlere yer verilmiştir. Anketlerden elde edilen ve analizlerde üzerinde durulan önemli bir değişken tüketim harcamalarıdır. Hanehalkının gerek satın alarak yaptığı harcamalar, gerekse anket ayı içerisinde kendisinin üreterek yine anket ayı içinde tükettiği maddeler, çalışan hanehalkı fertlerinin işyerinde üretilen ya da satılan mal ya da hizmetlerden haneye getirdikleri ile haneye başka hane ya da kuruluşlardan verilen hediyeler; hanehalkı reisi veya hanehalkında yaşayan yetişkin bir fert tarafından bir ay boyunca günlüklere kaydedilmektedir. Günlüklerden elde edilen harcama bilgileri, tüketim veri seti oluşturulurken COICOP (classification of individual consumption by purpose) sınıflama sistemine göre sınıflandırılarak elektronik ortama aktarılmıştır. Bu sınıflamar şöyledir: 1. Gıda ve alkolsüz içecekler, 2. Alkollü içecekler, sigara ve tütün, 3. Giyim ve ayakkabı, 4. Konut, su, elektrik, gaz ve diğer yakıtlar, 5. Mobilya, ev aletleri ve ev bakım hizmetleri, 6. Sağlık, 7. Ulaştırma, 8. Haberleşme, 9. Eğlence ve kültür, 10. Eğitim hizmetleri, 11. Lokanta, yemek hizmetleri ve oteller, 12. Çeşitli mal ve hizmetler. Veri setinde dayanıklı tüketim malı harcamaları, bu harcamaların değerinin 12'ye bölümü şeklinde verilmektedir. Çalışmamızda yıllık tüketim miktarı, hanehalkının anket ayındaki tüm tüketim harcamalarını kapsayan aylık hanehalkı tüketiminin 12 ile çarpımı şeklinde hesaplanmıştır. Harcama bilgileri dışında, HBA gelir ve gelirin birleşenlerine dair bilgiler de içermektedir. Gelire ilişkin sorular anket ayının sonunda sorulmakta ve önceki 12 aya ait dönemi kapsamaktadır.Yıllık kişisel harcanabilir gelir, işgücü geliri (ücret, maaş, yevmiye, fazla mesai ücreti, primler vb., tarım geliri, müteşebbüs geliri ve telif haklarınından elde edilen gelir), gayri

menkul ve mülk geliri (kira, faiz geliri, kar payı ve temettüler) ve transfer gelirinin (emekli maaşları, vergi iadesi, yaşlılık ve aile yardımları, işsizilik ve hastalık tazminleri, öğrenci bursları ve nafakalar) toplanmasıyla elde edilmektedir. Bu kalemler, vergiler ve sosyal güvenlik kesintileri dahil edilmeden, net kalemler olarak veri setinde yer almaktadırlar. Kişisel harcanabilir gelire ek olarak, hanehalkı harcanabilir gelir değiskeni de veri setinde yer almaktadır. Bu değişken, kişisel harcanabilir gelir toplamına izafi kiranın eklenmesi ve tüketim dışı harcamalar (emlak ve gümrük vergisi gibi vergiler, elektrik, su, telefon gibi cezalar, fitre ve zekat) ile başka hanelere yapılan düzenli nakdi yardımların çıkarılması ile elde edinilmiştir. Gelirle ilgili sorular görüşme öncesindeki 12 ayı kapsadığı için hanehalkı harcanabilir geliri anket ayına inflate edilmiştir. Çalışmada kullanılan tasarruf rakamları ise, yıllık toplam hanehalkı harcanabilir gelirinden, yıllık toplam hanehalkı tüketimi çıkartılarak elde edilmiştir. Hanehalkı Bütçe Anketleri aynı zamanda hanehalklarının yaş, cinsiyet, meslek, eğitim, aile yapısı, konut ve sahip olunan mallar gibi sosyo-ekonomik özellikleriyle de igili detaylı bilgi içermektedir. Değişkenlere ilişkin profiller oluşturulurken, hanehaklarının ankete dahil olma olasılığının tersine eşit olarak hesaplanan ağırlıklar kullanılmıştır. Yıllık gelir düzeyi 100 YTL den düşük olan hanehalkları analizlerden çıkartılmıştır.

Çalışmanın ilk bölümünde gelir, tüketim ve tasarruf, 2006 HBA kullanılarak yatay kesit analizlerle incelenmiştir. Analizler, değişkenler için yaş gruplarına göre oluşturulan tablolar ve grafiklere dayanmaktadır. Tüm örneklem dışında, gelir dördünlerine ve eğitim gruplarına göre de yaş profileri türetilmiştir. Yatay kesit analizlerden elde edilen bulgulardan bazıları şunlardır: Gelir profili yaşla beraber 45-49 yaşa kadar artmakta daha sonra azalmaktadır, bir diğer deyişle kambur bir şekil sergilemektedir. Dördünlere göre çıkartılmış gelir profillerine baktığımızda gelir eşitsizliğinin yaşla beraber çok değişmediğini görmekteyiz. Eğitime göre geliri incelediğimizde istisnasız bütün eğitim seviyeleri için gelir profilinin saatin ters yönünde bir rotasyona uğradığını görmekteyiz. Diğer bir deyişle, yüksek yaş grupları için görece bir artış görmekteyiz. Bu da Türkiye'de kohort etkilerinin (gruplar arasındaki farkın doğum tarihleriyle ilişkili olan değişkenlere bağlı olması

durumu) ne kadar önemli olabileceğine işaret etmektedir. Genç yaş gruplarındaki daha çok yüksek eğitim seviyeliler, yaşlılarda ise daha çok düşük eğitim seviyelilerin olması nedeniyle, bunu göz önüne almayan bir yaşam profili kambur şekli aşırılaştırmakta ve profili saat yönünde çevirerek yaşın belli bir seviyeden sonra gelir üzerindeki negatif etkisini aşırılaştırmaktadır.

Tüketim profilli de gelir gibi kambur bir yapı sergilemektedir ancak göreli olarak daha yataydır. Beklendiği gibi tüketim, tüm yaş grupları için gelirle beraber artış göstermektedir ki, bu durum yaşam döngüsü modelinin reddi anlamına gelmektedir. Tasarruflara baktığımızda belirgin olmayan bir kambur profil gözlemlenmektedir. Medyan tasarruflar, çok yaşlı ve çok genç reislere sahip hanehalkları da dahil olmak üzere tüm yaş grupları için pozitif bulunmuştur. Çoğu ülke çalışmasına benzer şekilde Türkiye'deki hanehalklarının tasarrufları gelirlerinin artan bir fonksiyonudur. Ancak bu durum davranışsal farklardan değil, geçici gelir şoklarından kaynaklanabilir. Bu yüzden gelir ile tasarruf arasındaki ilişkiyi daha doğru irdelemek adına örneklem cari gelir yerine, hanehalkı reisinin eğitim durumu kullanılarak sürekli gelire göre ayrılmıştır. Bu analizler sonucunda tasarrufların eğitim ile arttığı bulunmuştur.

Tasarruf oranının yaş profili yaşla beraber hafif artan bir eğilim sergilemektedir. Miras güdüsü, yaşam süresindeki belirisizlikler ve sağlık riski bu artan profilin sebepleri olabilirler. Ayrıca, Türkiye'deki hanehalkı kompozisyonları düşünüldüğünde, yaşlı ailelerin çalışan çocuklarıyla beraber yaşamaları aynı hanede yaşayan ve geliri olan insan oranını artıracak, yani bağımlılık oranını düşürecektir. Bu da yaşla beraber artan bir profile yol açabilecektir. Eğitim gruplarına göre tasarruf oranlarına baktığımızda, üniversite mezunları hariç diğer gruplar için daha belirgin artan profiller bulunmuştur. Tüketim sürekli gelirdeki değişimleri yansıttığı ve bu yüzden de geçici şoklardan daha az etkilendiği için tasarruf oranı dışında tasarrufların tüketime oranı da incelenmiştir. Buradaki sonuçlar tasarruf oranı sonuçları ile oldukça çok paralellik göstermektedir.

Yatay kesit analizleri, gelir, tüketim ve tasarrufların 2002-206 yılları arasındaki değişimlerini incelemek için de kullanılmıştır. Gelir profilleri tüm yıllar için benzer kambur şekil sergilemektedir. 2002 ve 2003 yıllarındaki gelir seviyeleri birbirine çok yakındır. 2004 yılında bütün yaş grupları için reel gelirde önemli bir artış olmuş, 2005 yılında ise bu artış devam etmiştir. Ancak 2004'teki artış genç yaş grupları için daha belirgindir. Yükselen gelir trendi, 2006'da yavaşlamıştır. Tüketim profilerinin zaman içindeki değişimi gelire oldukça benzemektedir. Ancak, 2004 yılı için tüketimdeki artış gelirdeki artış gelirdeki kadar çok değildir bu da tasarufflarda bir artışa yol açmıştır. 2005 yılında ise bu yapının tam tersi görülmüş, tüketim gelirden daha fazla artmış ve dolayısıyla tasarruflar düşmüştür. 2003 yılından 20005 yılına gelirde önemli artış gözlemlenmesine karşın 2005 yılındaki medyan tasarruflar 2003 yılındaki rakamlara yakındır. İncelenen dönemde en yüksek tasarruf oranlarına 2004 yılında rastlanmıştır. 2005 ve 2006 yıllarında 2004'e kıyasla daha yüksek bir gelir düzeyi görmemize karşın, bu yıllardaki tasarruflar oranları 2004 yılının altındadır. Hatta bu yıllardaki tasarruf oranları çoğu yaş grubu için 2003 seviyesinin bile altındadır ki 2003 yılı gelir düzeyi 2004'ten bile düşük bulunmuştur.

Tüketim, tasarruf gibi dinamik yapıya sahip değişkenleri incelerken yatay kesit analizler kullanmak bize sınırlı bilgi sağlayabilir çünkü bu analizler kullanılırken, farklı tarihlerde doğmuş ve bu yüzden farklı formasyona, farlı tecrübelere, farklı eğitim olanaklarına sahip bireyleri tek bir birey gibi düşünmekteyiz. Bir diğer deyişle, eğer kohort etkilerinin varlığı söz konusuysa yatay kesit profilleri yaşam profilleri olarak yorumlamak yanıltıcı olabilir. Bu durumun üstesinden gelmek için kişiyi tüm yaşamı boyunca takip etmeliyiz. Ancak gerçek hayatta böyle uzun panel veri setleri bulunmamaktadır. Bir diğer alternatif ise her yıl uygulanan anketleri kullanmak ve bunlardan sentetik panel veri seti yaratmaktadır. Browning, Deaton ve Irish (1985) tarafından geliştirilen bu yöntem gruplama tekniklerine kullanmaktadır ve aynı bireyi zaman içinde takip etmek yerine bir grubun ortalama davranışlarını takip etmeye dayanmaktadır. Yaşam döngüsü çerçevesi içinde grup olarak aynı yıl doğan bireyler seçilmiştir. Veri seti şu şekilde oluşturulmuştur: 2002 yılında 25

yaşında olanlar, 2003 yılında 26 yaşında olanlar ve devamı birinci kohort, 2002 yılında 26 yaşında, 2003 yılında 27 yaşında olanlar ve devamı ikinci kohort. Bu gruplar oluşturulduktan sonra analiz edilecek değişkenin o kohort yıl kombinasyonundaki ortalaması ya da medyanı alınarak sentetik panel oluşturulmaktadır. Kohortların zaman boyutu var olan anket yıllarının sayısıyla sınırlıdır bu yüzden farklı kohortların profilleri yaşam profilini oluşturmak için birleştirilmiştir.

Kohort analizleri grafiklere dayanmaktadır. Analizler yapılırken kohort, yıl ve yaş etkileri Deaton (1997) tarafından önerilen yöntemle, değişkeni kohort, yıl ve yaş kukla değişkenleri üzerine tahmin ederek, ayrıştırılmıştır. Burada, yılı ve yaşı bildiğimiz takdirde kohortu da bulabileceğimiz için tam çoklu bağlantı (perfect collinearity) problemi ortaya çıkmaktadır. Bunu aşmak için yıl kukla değişkenine ortalamasının sıfır olması ve trende ortogonal olması kısıtı getirilmiştir. Bir diğer deyişle, büyüme yaş ve kohort etkilerinden kaynaklanmakta ve yıl etkileri sadece ortalaması uzun dönemde sıfır olan dönemsel dalgalanmaları kapsamaktadır. Kohort analizlerinde 2002-2005 HBA'leri kullanılmıştır. 2002 yılında 25 yaşında, 2003'te 26 yaşında ve 2005'te 28 yaşında olanlar ilk kohortu oluştururken; 2002 yılında 67 yaşında, 2003'te 68 yaşında ve 2005'te 70 yaşında olanlar son kohortu oluşturmaktadırlar. Toplam 43 kohort ve 4 anket yılı olduğundan çalışmada 172 kohort-yıl hücresi kuulanılmıştır. Bunlardan en küçük hücre 43 bireyden oluşurken (2005 yılında 66 yaşındakiler), medyan hücre büyüklüğü 217 ve ortalama hücre büyüklüğü 272 olarak bulunmuştur.

Çalışmada kohort teknikleri ilk olarak hanehalklarının yapısının ve eğitim durumlarının analizlerinde kullanılmıştır. Bu analizler sonucunda hanehalkı büyüklüğünün tüm eğitim grupları için kambur bir şekil sergilediği ve eğitimle beraber hanelerinin büyüklüğünün azaldığı bulunmuştur. Eğitim analizlerine göre daha genç hanehalklarının daha eğitimli oldukları bulunmuştur. Yaşam profilinin iki ucunda hanehalklarının beraber yaşadıkları bulunmuştur. Yani genç hanehalkları yaşlı ebebeynleriyle birleşip aynı evde yaşamaktadırlar. Bu birleşme sonucunda

hanahalkı reisi genç ya da yaşlı aile üyesi olabilmektedir. Bu birleşme en çok en az eğitimli grupta görülmektedir yani bu gurubun düşük geliri hanehalklarını beraber yaşamaya itmiştir.

Oluşturulan sentetik panel verisiyle çizilen gelir profilinin kambur bir şekil sergilediği ancak kamburun gelişmiş ülkelerde bulunanlar kadar belirgin olmadığı görülmüştür. Yukarda bahsedilen hanehalklarının birleşmeleri, yaşam döngüsünün iki ucunda gelirdeki düşüşü sınırlamış bu yüzden de daha az belirgin bir kambur şeklin ortaya çıkmasına yol açmış olabilir. Yaş, kohort ve yıl etkilerinin ayrıştırılması sonucunda profildeki kambur şeklin kohort etkilerinden (daha genç kohortların daha yüksek yaşam boyu gelire sahip olması) kaynaklandığı bulunmuştur. Hanehalkı gelirinin ayrıştırılmış yaş profili yaşla beraber artan bir yapı sergilemektedir. Bu durum yaşlı hanehalklarının çocuklarıyla beraber yaşamalarının bir sonucu olabilir. Yıl etkilerine baktığımızda gözlemlenen 2002'den 2003'e trende göre daha az büyüme ve 2003'ten 2004'e ve 2004'ten 2005'e trende göre daha fazla büyüme, Türkiye'de 2002, 2003 ve 2004 yıllarında yaşanan yüksek büyüme rakamlarıyla tutarlıdır.

Tüketim profili gelire benzer bir kambur yapı sergilemektedir. Bu benzerlik yaşam döngüsü hipotezinin reddi olarak yorumlanabilir. Ancak, hanehalkı kompozisyonu ve işgücü katılım kararı gibi değişkenlerin de yaşam döngüsü dinamikleri vardır ve bunlar tüketimi doğrudan etkilerler. Bu bağlamda yaşam döngüsü modelini daha sağlıklı test etmek için eşdeğer fert başına (per adult-equivalent) tüketim profili oluşturulmuştur. Bu profil orjinal tüketim profiline göre daha yatay olarak bulunmuştur, bu da modelin geçerli olabileceği şeklinde yorumlanılabilir. Ayrıştırma sonuçlarında önemli kohort etkileri bulunmuştur, daha genç kohortlar daha fazla tüketmektedirler. Gelirde bulunan artan yaş profili, tüketimde de benzer bir profilin ortaya çıkmasına yol açmıştır. Ayrıca, Türkiye'deki yüksek reel faiz, insanların tüketimlerini ilerleyen yaşlarına ertelemelerine yol açabilir. 60 yaşından sonra tüketimin yaş profilindeki göreli olarak yataylaşma, emeklilik sonrasında

azalan tüketim ihtiyacından ya da bu yaştan sonra gözlemlenen yatay hanehalkı büyüklüğü profilinden kaynaklanmakta olabilir.

Tasarruf profili 50 yaşına kadar artmakta daha sonra göreli olarak yatay bir yapı sergilemektedir. Hem çok genç hem de çok yaşlı hanehalkları için bulunan pozitif tasarruf oranları yaşam döngüsü modeliyle uyuşmamaktadır. Literatür gençlerin pozitif tasarruflarını nakit kısıtı ve ihtiyat güdüsü ile, yaşlıların pozitif tasarrufların ise miras güdüsü, yaşam süresi belirsizliği ve sağlık riski ile açıklamaktadır. Tasarruf oranını incelediğimizde hafifçe artan bir profil gözlemlemekteyiz. Ayrıştırılmış yaş profili 50'li yaşlara kadar sabit bir seyir izlemekte ve ardından artmaktadır. Düşük bağımlılık oranı böyle bir yapıya yol açabilir. Ayrıca, miras güdüsü, yaşam süresi belirsizliği ve sağlık riski diğer nedenler olarak kabul edilebilir. Kohort etkilerine baktığımızda, yaşlı kohortlarda daha az yaşlılar daha çok tasarruf yaparlarken, genç kohortlarda daha yaşlılar daha çok tasarruf yapmaktadırlar. Çalışmada, dayanıklı tüketim, eğitim ve sağlık harcamalarını da tasarruf olarak kabul eden daha geniş bir tasarruf oranı tanımı da kullanılmıştır. Bu tasarruf oranı sonuçları ile standard tasarruf oranı sonuçlarını karşılaştırdığımızda, genç hanehalklarının dayanıklı tüketim mallarına daha çok para harcadıkları gözlemlenmektedir.

Toplam gelir ve tüketime ilave olarak bunların alt kalemleri de incelenmiştir. 60 yaşından sonra emek geliri kazananların oranının, diğer ülkelerden farklı şekilde, yüksek olması (%50 civarında), Türkiye'de bireylerin yaşlılık yıllarında bile çalıştığını göstermektedir. Yaşlı hanehalklarının çocuklarıyla yaşamaları yüksek oranın bir başka sebebi olabilir. Faiz gelirinin profilinin kambur bir şekil sergilemesi, hanehalklarının gençken ev almak için tasarruf ettikleri ve orta yaşlarda ev aldıkları şeklinde yorumlanabilir. Faiz geliri kazananların oranı ve bunun toplam gelir içindeki payı oldukça düşüktür. Gayrimenkul gelirinin profili, faiz geliri profilinden farklı şekilde yaşla beraber artmaktadır; yani Türkiye'deki hanehalkları paralarını zaman içinde gayrimenkule yatırmaktadırlar. Profilin son kısımlarında görülen negatif kohort etkisi bize yaşlı kohortların kendinden önceki kuşaklara göre

daha çok gayrimenkul yatırımı yaptıklarını göstermektedir. Transfer geliri elde eden hanehalklarının payı yüksek olmasına karşın, miktarlar oldukça düşüktür (hemen hemen tüm kohortlar için 600 TL'den az). Sosyal güvenlik sistemindeki iyileştirmeler, transfer geliri elde edenlerin oranı profilinde pozitif kohort etkileri görmemize yol açmıştır; yani kohortlar gençleştikçe gelir elde edenlerin payı artmaktadır. Diğer kalemlerle karşılaştırıldığında, emeklilik gelirinin hanehalkı geliri içinde oldukça önemli yere sahip olduğu görülmektedir. Emeklilikten sonra emeklilik gelirine sahip olan insanların oranının, örneğin Amerika Birleşik Devletleri'nde olduğu gibi, 1'e yakın olmasını bekleriz. Ancak bu oran Türkiye'de %80 civarında kalmaktadır. Bu durum insanların emekli olmayıp çalışmaya devam ettiklerini ve/veya bazı bireylerin herhangi bir sosyal güvenlik sistemince kapsanmadığını göstermektedir.

Tüketimin alt kalemleri incelendiğinde bazı önemli sonuçlara ulaşılmaktadır. Eğitim ve sağlık harcamalarının toplam tüketim harcamaları içindeki payları oldukça düşüktür (%5'ten az). Eğitim harcamalarının profili orta yaşlarda evde okula giden çocuk olabileceğinden, beklendiği gibi kambur bir şekil sergilemektedir. Sağlık harcamalarında yaşla beraber artan bir profil beklenirken, yatay bir profil bulunmuştur. Bu şekle Sosyal Güvenlik Sisteminin iyi kapsama sahip olması yol açmış olabilir. Dayanıklı tüketim malı harcamalarına ilişkin profil çok da belirgin olmayan kambur şekle sahiptir. Bu profildeki belirgin kohort etkileri genç kohortların daha çok dayanıklı tüketim harcaması yaptıklarını göstermektedir.

Kırda ve kentte, gelir, tüketim ve tasarruf dinamikleri önemli farklılıklar gösterebilir. Bu yüzden bu değişkenler, örneklem kır ve kent olarak ikiye bölündükten sonra kohort teknikleriyle tekrar analiz edilmişlerdir. Kırdaki hanehalklarının gelir profili şehirde yaşayanların profiline göre daha yatay bulunmuştur. Bu görece daha yataylığın olası sebebleri şunlardır: İlk olarak, kırda genç ve yaşlı hanehalklarının ebebeyn ya da çocuklarıyla beraber yaşamayı tercih etmeleri sebebiyle, aynı evde yaşayan çekirdek aile sayısı şehre göre daha yüksektir. Bir diğer sebep kırdaki ücret geliri olanaklarının kentten daha farklı

olmasıdır. Kentte yükselmeler gibi olaylarla gelir orta yaşlarda artarken emeklilikle düşebilir ancak kırda tarımda çalışanların geliri yaşla beraber çok farklılık göstermez. Son olarak, yaşam profilinin sonunda, çalışan kadın ve erkeklerin oranı, yaşam profilinin başında ise çalışan kadınların oranı, kırda kentekine göre daha yüksektir ve bu durum kırdaki hanehalkı gelirinin daha yatay olamasına yol açabilir. Kırdaki ve kentteki hanehalklarının tüketim profillerine baktığımızda gelir profillerine oldukça benzedikleri görülmektedir. Ayrıştırılmış yaş profillerine göre, kırsal bölgelerde tasarruflar yaşla beraber artarken, kentte tam tersi bir yapı söz konusudur. Ayrıca kırdaki yaşlı kohortlar gençlere göre daha çok tasarruf yapmaktadırlar. Tasarruf oranlarını karşılaştırdığımızda üzerinde durulması gereken ilk nokta, kırdaki tasarruf oranlarının kente göre daha yüksek olduğudur. Bu yüksek tasarrufun olası bir sebebi sosyal güvencesi olmayan insanların oranının kırda daha yüksek olmasıdır. Kırdaki hanehalklarının tüketim ihtiyaçlarının daha düşük olması da diğer bir sebep olabilir. Her iki bölgede yaşayan hanehalkları için de tasarruf profillerinin yaşla artan bir trende sahip oldukları gözlemlenmektedir. Kırda daha geç doğan kohortlar (daha genç kohortlar) yaşlılara göre daha fazla tasarruf ederlerken, kentte tam tersi durum geçerlidir. Reel ücretlerdeki büyüme, sosyal güvenlik sistemindeki değişiklik ve artan iş ve gelir belirsizlikleri kentlerde gençlerin yaşlılara göre daha fazla tasarruf etmelerine yol açıyor olabilir.

İhtiyat güdüsü ile tasarruf modeline göre, gelirdeki belirsizlik hanehalklarının (ihtiyat güdüsü ile) tasarruflarında artışa yol açacaktır. Bu olguyu kontrol etmek için veri seti formel ve enformel hanehalkları olarak ikiye ayrılmıştır; zira enformel sektörde çalışanların işsiz kalma olasılıkları daha yüksek ve gelirleri daha belirsizdir. Formel-enformel analizleri kentteki hanehalklarını kapsamaktadır. Hanehalkları, veri seti ayrılırken hanehalkında en az bir formel sektör çalışanı varsa formel hanehalkı, tüm bireyler enformel sektörde çalışıyorsa enformel hanehalkı olarak tanımlanmıştır. Formel hanehalklarının payına baktığımızda yaşlılardaki payın beklenenden yüksek olduğunu görmekteyiz. Bunun olası sebepleri yaşlıların emekli olmayıp çalışmaya devam etmesi ya da, yaşlı hanehalklarının çalışan çocuklarıyla beraber yaşamaları olabilir. Bu analizlerde asıl ilgilenilen konu tasarruf

oranları olmasına karşın, iki tip hanehalkının gelir ve tüketimleri de analiz edilmiştir. Gelir analizleri yapılmadan önce, formel hanehalklarının gelirlerine sosyal güvenlik kesintileri eklenmiştir, çünkü bu kesintiler zorunlu olarak yapılan tasarruflardan başka birşey değildir. Bu kesintiler memurlar ve işçiler için ayrı ayrı hesaplanmıştır. Analiz sonuçlarında, tüm yaş grupları için formel hanehalklarının gelirleri beklenildiği gibi enformel hanehalkları gelirlerine göre daha yüksek bulunmuştur. Enformel hanehalklarının gelir profili 50'li yaşların ortasına kadar artan daha sonra ise azalan bir yapı sergilemektedir ki bu beklenen bir şekildir çünkü bunlar daha çok mavi yakalı işçilerdir. Formel hanehalklarının profili ise 60 yaşına kadar artmakta sonrasında isehafif düşüş göstermektedir. Her iki tip hanehalkının tüketim profilleri gelir profillerine benzemektedir. Tasarruf oranları karşılaştırıldığında formel hanehalklarının enformel hanehalklarına göre her yaş grubu için daha fazla tasarruf ettikleri bulunmuştur. Bu bulgu ihtiyat güdüsü ile tasarruf modelinin geçerli olmadığı anlamına gelmektedir. Enformel hanehalklarının tasarrufları, sosyal güvenlik kesintilerini tasarruf olarak kabul etmessek bile formel hanehalklarının tasarruflarından daha düşüktür. Bu konuyla ilgili üzerinde durulması gereken son bir nokta ise sosyal güvenlik kesintilerinin hanehalklarının tasarrufları içinde oldukça önemli bir yer tuttuğudur. Bu durum özellikle genç hanehalkları için daha belirgindir.

Çalışmada son olarak tüketim modelleri mikro veri kullanılarak test edilmiştir. Oluşturulan sentetik panel veri seti ile ilk olarak yaşam döngüsü hipotezi test edilmiştir. Logaritması alınmış ve doğrusallaştırılmış Euler denklemine, gelir büyümesi değişkeninin (aşırı hassaslık parametresi) yanısıra hanehalkının demografik özellikleri (hanehalkı büyüklüğü, çocuk sayısı, yaş ve kır-kent yerleşim yeri bilgisi) ve işgücü arzı kararı (çalışan kadın kukla değişkeni) kontrol değişkenleri de eklenmiştir. Modelde bağımlı değişken olan tüketim büyümesi ile gelir büyümesi ve tercih değişkenleri (choice variables) olan demografik değişkenler ve işgücü arz değişkeninin birbirleriyle ilişkili olmaları (endogeneity problem) tahminlerin genelleştirilmiş momentler yöntemi (generalized method of moments) ile yapılmasını gerekli kılmıştır. Öncelikle kontrol değişkenleri modele

dahil edilmemiştir. Tahmin sonuçlarına göre gelir büyümesi katsayısı istatistiksel olarak anlamlı ve gelişmiş ülke çalışmalarına göre yüksek bir katsayıyla bulunmuştur. Bu durum yaşam döngüsü modelinin reddi anlamına gelmektedir çünkü modele göre gelirdeki beklenen değişikliklerin tüketimdeki değişimi öngörmemesi gerekmektedir. Kontrol değişkenlerinin modele dahil edilmesi, gelir büyümesinin anlamlılığını bozmamış ancak etkisini küçültmüştür. Bu tahminlerin ardından, modelin reddinin olası sebebi olarak ihtiyat güdüsünün varlığı test edilmiştir. Bu test için formel-enformel verisi kullanılmıştır. Daha önce belirtildiği gibi, formel hanehalklarının işsizlik olasılıklarının ve gelir risklerinin daha yüksek olması sebebiyle daha fazla (ihtiyat güdüsü ile) tasarruf yapmaları ve dolayısıyla tüketimlerinin daha fazla büyümesi beklenilmektedir. İhtiyat güdüsü testi için tahminler iki farklı yaklaşım ile yapılmıştır. İlkinde formel hanehalkları için kukla değişken tanımlanmış, bu değişkenin kohort ortalaması alındığında o kohorttaki enformel hanehalklarının payına ilişkin değişken elde edilmiştir. İkinci yaklaşımda ise kohortlar oluşturulurken formel-enformel ayrımı gözetilmiş, denkleme formel kohortlar için kukla değişken eklenmiştir. Her iki yaklaşımda da tahmin edilecek denkleme gelir büyümesi değişkeni eklenmiş ve tahminler en küçük kareler ve genelleştirilmiş momentler yöntemleri ile yapılmıştır. Yapılan tahminler sonucunda ihtiyat güdüsü ile tasarruf yapıldığına dair sonuçlara ulaşılamamıştır. Kısaca, Türkiye'de yaşayan hanehalkları yaşam döngüsü modelinin öngördüğü şekilde davranmamaktadırlar ancak bunun sebebi ihtiyat güdüsü ile davranmaları değildir.

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